

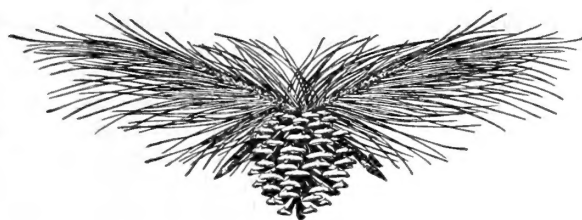
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FOREST WORKER



May, 1930

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Announcements

General Federation of Women's Clubs

The Twentieth Biennial Convention of the General Federation of Women's Clubs will be held at Denver, Colo., June 5-14. A special conservation meeting will be held on the afternoon of June 9. Mrs. Katherine B. Tippetts, chairman of the division of conservation of natural resources, will preside and will speak on A Concerted Effort for Conservation. Mrs. F. E. Whitley, vice chairman, will speak on America, the Beautiful—At the Cross Roads. Mrs. Frank Warren, chairman of the water and waterways committee, will give a brief review of recent waterway developments. Following the program a memorial tree will be planted in honor of Stephen D. Mather, former Chief of the National Park Service, the tribute being given by Mrs. John D. Sherman, and the benediction pronounced by Mrs. John F. Sippel, president of the General Federation.

The American Society of Agricultural Engineers

The annual meeting of the American Society of Agricultural Engineers will be held at Moline, Ill., June 16-18. An invitation to join the International Congress of Agricultural Engineering to be held at

Liege, Belgium, in August of this year, has recently been received and accepted by the American Society of Agricultural Engineers.

The Pacific coast section of the American Society of Agricultural Engineers was held at Oregon State College, Corvallis, on May 2 and 3. Machinery, lumbering, electrification, tillage, and reclamation were subjects of the various speakers on the program.

National Conference on State Parks

The tenth annual meeting of the National Conference on State Parks will be held at Linville, N. C., June 17-20. The Governor of North Carolina and the North Carolina Department of Conservation and Development are the official hosts to the convention.

At the business sessions of the conference considerable attention will be given to the special problems of the Southern States, few of which have as yet made any great progress in the establishment of State parks, but most of which contain groups planning such development.

Special features of the conference will be trips to points of interest in the vicinity, including a visit to Linville Falls and Linville Gorge, where a State park of 50,000 to 60,000 acres is projected. Trips will also be made to Lake Tahoma, Boone, Blowing Rock, and other centers of picturesque mountain scenery.

This issue of the **FOREST WORKER** was prepared in the absence of the editor.

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MAY, 1930

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State Forestry

East Has Bad Fire Season

The Eastern States experienced serious forest fire conditions this spring. Careless smokers and brush burners were said to be largely responsible.

In New York 65 forest, brush, and grass fires burned at one time during the last week of April and the first in May, taking heavy toll in widely separated sections of the State. The State conservation commission warned against starting bonfires in woods or fields until a heavy rain relieved conditions of dryness. Several thousand acres were burned over in the State. Approximately 30 acres of the thousand-acre Charles Lathrop Pack demonstration forest near Warrensburg, property of the New York State College of Forestry, were destroyed by fire. Other serious fires occurred in the Adirondack region.

In Wisconsin fires were reported burning over approximately 20,000 acres on the last day of April.

The first half of April, with its dry weather, brought serious fire troubles to the Southern Appalachian and Arkansas forests, particularly during the period from April 11 to 14. Losses occurred at this time on the Shenandoah and Natural Bridge National Forests in Virginia and the Ozark Forest in Arkansas. During this period there was critical fire weather on the Monongahela National Forest in West Virginia, on the Nantahala and Pisgah Forests in North Carolina, and on the Unaka Forest in Tennessee, but these Forests were able to keep down fire damage.

A bad situation existed on the Shenandoah National Forest, where two large fires burned at the same time, one on the south end of the Massanutten district, covering 3,000 acres of national forest land and 1,000 acres of private land, and the other on the north end of the Lost River district, burning over 5,000 acres of private land. Other large fires also burned around the forest. The fire on the Natural Bridge Forest burned more than 6,000 acres of timbered and cut-over na-

tional forest land. The fires on the Virginia national forests broke the excellent fire record of the past few years for that State.

On the Ozark National Forest an outburst of incendiarism was the chief cause of trouble.

Press reports early in May carried news of forest and brush fires sweeping over hundreds of square miles in nine Eastern States. Fire starting in a wooden trestle near Nashua, N. H., aided by dry underbrush, swept through part of the town, rendered 1,500 persons homeless, and wrought damage estimated at \$4,000,000. Large groups of regular and volunteer fire fighters fought flames which sprang up at several places in New Jersey. Large acreages burned in Massachusetts, and in West Virginia flames endangered oil wells and towns in their vicinity. Fires were reported also in Connecticut, Rhode Island, Delaware, Pennsylvania, and Maine.

California Prepares for its Annual Fight with Forest Fire

The California State Board of Forestry, at its meeting on April 3, reaffirmed its policy of adequate fire prevention and suppression on all forest and brush lands and grass and grain acreage adjacent to or intermingled with forest or brush-covered areas. The board also announced its decision to relinquish cooperative suppression and prevention on other grass and grain areas than those attached to forest and brush-covered lands to local fire protection districts as soon as such functions can safely be transferred to such agencies. In connection with its strengthening of policies best suited to permit most effective service in fire control at a minimum of public loss, the board determined that \$800,000, exclusive of funds from Federal and other sources, is the minimum which the State can devote to fire prevention, if an effective organization is to be maintained.

Another significant decision of the State board of forestry, was its transmittal to the State engineer of the contents of a resolution adopted by a state-wide forestry convention recently held at Sacramento, urging that the forestry profession be represented in all matters concerning a state-wide water program. This point of view was considered particularly important in California, because the State's water resources are dependent upon protection of watersheds, the denudation of which would soon result in marked abatement of irrigation and municipal water supplies. The gist of the resolutions adopted by this state-wide meeting as well as of the policies outlined by the board are that unless adequate financial provision for effective forest and range fire prevention is made, an ever-increasing loss of some of the State's most valuable resources must be expected. Rapid highway extension and phenomenal growth of automotive transportation are but two of many factors contributing to the increase of fire hazards at a rapid rate.

Despite the campaign of education which the State board of forestry has carried on for several years, carelessness of smokers and spread of industrial enterprises into regions formerly rated as inaccessible or impracticable for manufacturing purposes are playing important parts in increasing the danger to watershed, forest, and range. This rapid increase of hazards has been entirely too frequently illustrated in recent years by destructive fires raging simultaneously in various parts of the State.

Progress in Forest Protection Reported in Washington

Of the 387,254 acres of land burned over in the State of Washington last year, 80.8 per cent was either cut-over, burned-over, or lands covered with young growth, according to George C. Joy, Washington State supervisor of forestry. It is difficult to estimate the loss in dollars, but there is a definite loss which will be more apparent in the future than now, he states.

"The sentiment is prevalent that artificial reforestation—planting trees—must be resorted to to secure another crop of timber," Mr. Joy says. "The most effective means of securing a second-growth crop of timber on deforested land is to protect that land from fire. We are growing millions and millions of young trees now and millions more are starting to grow each year, and this will continue until deforested acres are reforested if we can keep the fire off them.

"There are some areas which have been logged or are in process of being logged from which the timber has been swept clean, leaving seed trees too far distant for us to assume or even presume that natural reforestation will take place within a reasonable length of time. No doubt some of these areas will have to be planted.

"Keeping fire off the land is the most important an vital factor in its reforestation, and that forestation is taking place now. The moneys expended for protection are bringing far greater results in producing a new crop of timber than will ever be produced by any means of planting.

"I wish to thus evaluate the two means of reforestation. The general consensus of opinion is the other way around, and many do not appreciate what is accomplished through natural processes."

Outside of the national forests 1,662 fires occurred in Washington last year. Lumbering operations caused 150; railroads, 146; campers, 139; smokers, 382; berry pickers, 38; brush burning, 187; lightning, 99; incendiarism, 154; miscellaneous causes, 367.

The total acreage burned over was 387,254. Merchantable timber killed was 153,168,000 board feet with an estimated loss of \$35,826. The loss in logs and logging equipment was \$240,418, and to other property it was \$72,563, or a total loss of \$348,807.

The cost of fire suppression was \$135,222. The total cost for prevention and suppression was \$481,957.

Quinnipiac Forest Trail Opened to Public

At a field meeting held in Bethany Gap, Arnold G. Dana accepted, on behalf of the public, the Quinnipiac Trail, which is the first completed portion of the trail system of the Connecticut Forest and Park Association. Prof. Everett O. Waters, chairman of the New Haven section, made the presentation speech and handed to Mr. Dana a blue arrow similar to those used in marking the forest trail, thus opening to the people of Connecticut the association's trail system. All sections of the State were represented in the large and enthusiastic gathering which was presided over by Col. T. S. Woolsey, president of the association.

Professor Waters, in his presentation speech, thanked the many landowners who have given permission to cross their property. The finest cooperation has been received, and the public should reciprocate, he said, by guarding against fire and vandalism. The actual trail construction has been done by the Yale Outing Club, the Boy Scouts, and other volunteer workers.

Edgar L. Herrmance, chairman of the State trails committee, gave a brief history of the trail work and outlined future plans. At Waterbury, Watertown, and Hartford section chairmen with their volunteer crews are working on other portions of the State trail system. The northern terminus of the Quinnipiac Trail will be Southington Mountain, where the Tunxis Trail will continue north to the Massachusetts line and the Mattatuck Trail run northwest to Lake Mohawk. Feeder trails will be provided every few miles, so that trampers may select round-trip walks

of varying lengths. Overnight shelters are among the plans for the future. The Connecticut Forest and Park Association expects to put the State in the lead in the development of this increasingly popular form of outdoor recreation.

Before and after lunch tramping parties were taken over samples of the route. About 10 miles of the Quinnipiac Trail west and north from Mount Carmel have been completed and marked with spots of light-blue paint. The series of cliffs on York Mountain, Mad Man's Hill, and Mount Sanford give a succession of wide offlooks.

Camp Ground Enlarged on People's Forest in Connecticut

The State of Connecticut is to receive another important gift of land as an addition to the People's Forest in the town of Barkhamsted, Litchfield County, according to an announcement by the Connecticut Forest and Park Association. Mrs. Harris Whittemore of Naugatuck, has given funds for the purchase of 33 acres as an addition to the Harris Whittemore camp ground on the People's Forest. Mrs. Whittemore's gift is in memory of her husband, the late Harris Whittemore, who was for many years a member of the State park and forest commission.

The land is situated along both sides of the Farmington River and includes a small island. The gift enlarges this public camp ground to over 61 acres.

The People's Forest has been made possible by gifts made directly to the State or received through the Connecticut Forest and Park Association of New Haven. The forest has an area of more than 1850 acres and is devoted to outdoor recreation, timber growing, and the protection of wild life. Over 300 individuals and associations have so far contributed to the fund for purchase of the forest, gifts ranging from 25 cents to several thousands of dollars. Women's clubs, service clubs, outdoor organizations, and patriotic societies, as well as many individuals, have contributed to make the People's Forest one of the most interesting and valuable State forests in Connecticut.

Connecticut now has 17 State forests with an area of over 51,000 acres. The forestry program calls for at least 200,000 acres of State forests.

Farmers will Collect and Market Native Plants

The farmers of Parsons, W. Va., have organized the West Virginia Native Plant Growers' Association for collecting and marketing native plants. Most of these farmers are living on marginal or submarginal lands, which they define as lands that will not produce a \$1,200 standard of living from agricultural crops.

These lands grow profuse crops of many ornamental native plants. The plants as they stand have little or no value, but when carefully collected and transferred they make splendid ornamental plantings.

The farmers of Parsons aim to make the collecting work a permanent business by transplanting small material and cutting back large material unfit for sale. The latter will soon grow into suitable collecting stock.

At present the Giant laurel (*Rhododendron maximum*), Mountain laurel (*Kalmia latifolia*), Flame honeysuckle (*Azalea calendulacea*), Pinxter bloom (*Azalea nudiflora*) are being collected. It is hoped that other materials can be added later as the work grows.

There is no chance of the extermination of native plants by such collecting as is being done at Parsons. Seed plants are left in all collecting areas for reseeding. Ten years hence there will probably be more plants in the collected areas than there are to-day, the association believes.

California Division of Highways Reports Fire Reduction Campaign

According to a report by T. H. Dennis, maintenance engineer, division of highways, State department of public works, 885 miles of roadside were cleaned of vegetation in 1929 at a cost of \$54,000 to reduce the hazard of fires caused by careless motor tourists in California. The program for 1930, now under way, involves the clearing of 1,020 miles of road side at an estimated cost of \$76,750.

The division of highways cooperates with the United States Forest Service in reporting and handling all fires in national forests pending relief, and has a similar agreement with the State division of forestry. Additional cooperation in fire reduction has been furnished by the division of highways by the clearing of rights of way through forested areas. To date this has been undertaken on the Alturas, Susanville, and Trinity laterals, on the Placerville-Lake Tahoe, Auburn, Big Oak Flat, Kit Carson, Ebbetts Pass, Sonora Pass, Pacific, Redwood, and Downieville highways. The importance of this work has been recognized, and special provisions concerning clearing have been written in all construction contracts within forested areas.

Georgia Highway Forest Demonstrations Planned

Forest demonstrations are to be established by the Georgia Forest Service in cooperation with local civic organizations along main highways of the State. The main objects of the demonstrations are to show how natural reforestation will come about where fires are kept out and how methods of thinning and other management will make the new growth develop rapidly and economically.

Large signs are to designate these demonstration acres and smaller signs will tell of the particular work being done. Local civic organizations are to sponsor these undertakings in the interest of reforestation and forest management in their respective territories.

Several sites in the State have already been selected and signs for marking them are being made. As a result of this undertaking the Georgia Forest Service hopes to stimulate greater interest in protection of forests from fire and in growing forests for profit.

Georgia Introduces Blight-Immune Chestnuts

The Georgia Forest Service has planted several thousand chestnut seedlings grown from seed of a European variety that is believed to be immune to blight. These plantings have been made at the State forest park at Neel Gap, the planting stock being furnished by the United States Forest Service.

No hope is held out for saving the native chestnuts from the blight that has moved steadily from the north down the Appalachian chain of mountains. The chief hope now of having any chestnuts in the future is believed to be in growing varieties that have proven resistant to the disease.

Studies in blight resistance of chestnuts are being made by the Georgia Forest Service in cooperation with the Georgia Experiment Station which will carry on some research work at its mountain experiment station near Blairsville. Dr. B. B. Higgins, of the experiment station, one of the leading authorities on plant diseases in this country, will have immediate charge of the studies of chestnut blight.

Money from Forest Products

The Farmers Federal News reports that the forest products department, organized by the North Carolina Farmers Federation in January (Forest Worker, January, p. 1) has marketed 95 carloads of forest products for the farmers of western North Carolina in the first three months of its work.

These products consisted of chemical wood, acid wood, locust wood, locust posts, walnut logs, poplar logs, ties, and shrubbery. The variety of the products shows how difficult it would have been for the individual farmers to have marketed them to advantage if they had not had the assistance of the federation in doing this, the report says.

Not only is the new department bringing in new money to the farmers of the mountains, but it is also, it is stated, "instrumental in creating a spirit of optimism among them." The farmers are learning how to make the most of their opportunities.

Campaign to Protect Minnesota's White Pine From Rust

At the call of the State commissioner of forestry, foresters, plant pathologists, horticulturists, and other scientists met in conference at University Farm in March to outline an aggressive campaign to protect Minnesota's stands of white pine from destruction by blister rust, which has become established in 12 counties of the State.

Resolutions were adopted asking the State legislature for an appropriation for cooperation of Federal and local State agencies in control measures and for an enabling law to permit the counties to appropriate local funds for its control. The consensus called also for adequate studies of genetics and epidemiology as related to control of the rust, and for an advisory committee to the commissioner of forestry and fire prevention appointed from his office, and from the State and university departments of agriculture, for the purpose of organizing, correlating, and activating educational work on the control of white-pine blister rust in Minnesota, the State blister-rust control leader to act as secretary of this committee.

Connecticut Has Six Forest Protective Associations

Connecticut has 89,198 acres of forest land under protection by associations in cooperation with the State, according to a recent report. The protection is against fire and thefts of evergreens. The members of the association assess themselves a few cents an acre and the State forestry department has an agreement with the association to match their expenditures at the rate of 4 cents per acre per year. There are six such organizations in different parts of the State and patrolmen employed by each are doing very effective work the report states. The largest and oldest of these associations is the Talcott Mountain, in Hartford County, which has an area of a little over 25,000 acres. The other five, with acreages varying from about 21,000 acres to a little more than 5,000, are the Housatonic, Naugatuck Valley, Central Fairfield, Ridgefield, and High Rock.

Texas Lumber Company Replants Lands

The planting of 5 acres of seedling pine trees for research and demonstration purposes has recently been completed at Conroe, Montgomery County, by the Delta Land & Timber Co., in cooperation with the Texas Forest Service. The planting was done on land owned by the company within the city limits of Conroe.

and just across the road from a big sawmill where thousands of feet of sawlogs are turned into lumber each day. Alternate rows of longleaf and slash pine were planted on 4 of the 5 acres, and the other acre was planted to loblolly pine. The area is surrounded by a hog-proof fence, and a large sign, erected by the company, calls attention to the demonstration. Large numbers of people visited the area during the planting and many were surprised to find that pine trees could be transplanted. All expressed amazement at the relatively simple method employed in setting out the little trees.

Maine Towns Vote Funds for Blister-Rust Control

W. O. Frost, State leader of blister-rust control in Maine, states that 56 towns in Maine have appropriated \$9,862 for carrying on blister-rust control work this season in cooperation with the State and Federal Government. The largest appropriations were made by Bar Harbor and Mount Desert, both summer resort towns, their combined appropriation being \$2,750. Appropriations in other towns varied from \$50 to \$350.

Mr. Frost tells of cooperation even from a certain town which has a present population of 176, polls of but 59, an estate value of \$81,295, and an acreage of but 4,100 acres. The town is an island at the mouth of the Kennebec River.

New York's Forest Recreation Facilities Being Greatly Enlarged

The work of developing State forest preserves for recreational use by the people, which was first undertaken by the New York Conservation Department in 1920, will be given added impetus during the coming season by increased appropriations recently made available by the legislature.

More work will be done than in any previous year in improving the trails in the Adirondack and Catskill regions. Open camps are to be built, new public camp sites are to be developed, and many of the older camp sites that have proven so popular with summer visitors will be enlarged and improved.

Receipts from Connecticut Forests

Receipts turned into the Connecticut State treasury from State forests for the year ending December 31, 1929, amounted to \$4,985.83. Of this amount 49 per cent was for stumpage including material sold on the stump, rentals, etc., while 51 per cent was for materials cut by the department employees. Only a small part of this latter item represents profit, but all the material cut has been for the improvement of the forest. In addition to material sold, 324 cords of dead wood were given to local residents who cut it under the supervision of the local rangers.

Conflict in Corn Borer and Fire Control Adjusted

Burning over last year's corn fields prior to May 1 is required in Connecticut in regions infested with the corn borer. This burning can only be done when it is fairly dry so that fire will run through the weeds. A complication arose in Connecticut because of a ruling preventing the issuance of burning permits during April except on rainy days or a day following a rain. In order to facilitate matters, the ruling has been modified to allow permits to farmers on days when there is little wind, provided they have plowed two or three furrows around their fields before burning.

Serious Forest Fires in Indiana

The dry weather of late March and the early portion of April caused a severe forest fire loss to the woodlands of Indiana. Only the prompt work of organized fire-fighting crews saved several thousand acres of timberland in the parks, game preserves, and State forests from going up in smoke. Nine incipient fires were blocked on State land within a period of two weeks. Three million acres of timberland and abandoned fields growing up to forest cover are without fire protection.

Massachusetts Woodlands Closed to Prevent Fires

The forests and woodlands of Massachusetts were closed during the spring fire season by proclamation of Gov. Frank G. Allen to all persons except the owners and tenants, their agents and employees, or those holding written permits from the owner or tenant.

The action was taken, according to the proclamation, because of the long-continued dry period, which had greatly increased the fire hazard.

Spring Fires Burn Over 10,000 Acres

More than 575 forest fires in Connecticut burned over an area in excess of 10,000 acres, to April 23, according to Robert M. Ross, forester for the Connecticut Forest and Park Association. Practically all of these fires were due to carelessness of men, women, and children with fire in and adjoining woodlands.

Some justices of the peace are too lenient in trying violators of the forest fire code, Mr. Ross declared. The forest land owners, according to these officials, are entitled to fire protection. City and municipal water boards have spent millions of dollars to protect watersheds so that the people may have an abundance of pure water. Forest growth on such property is of immense value, he said, and the unlawful fire builder threatens the welfare of whole communities.

Town Forest Supplies School Funds

In 1928 it became necessary for the town of Fryeburg, Me., to build an addition to its central school building. The cost of the proposed enlargement was estimated at about \$7,500. The usual method of financing a school building is for the municipality to lay a heavy property tax or else issue bonds on long or short terms. In this case neither of these methods was followed. The town simply went to its own forest of white pine and cut and sold enough lumber to finance the work.

The exact cost of the renovations was \$7,120. Every cent of this money went into the building. There were no overhead charges for printing bonds, or commissions, no attorney's fees. The town still owns enough standing timber to build another schoolhouse.

New Conservation Laws for New York

On May 4 Governor Roosevelt, of New York, signed nine bills affecting conservation of the State's natural

resources. Most of these bills made appropriations for purchase of lands for park and other conservation purposes. One measure provides for the establishment of a nursery for the production of trees to be used in planting along highways and makes an appropriation of \$14,000 for this project.



At its last regular session the Kentucky Legislature passed, over the governor's veto, a bill providing for the acceptance of the offer of T. Coleman du Pont to provide funds for the purchase of land at Cumberland Falls for a State park and to empower the park commission to condemn land for park purposes when so directed by the legislature.



The Conservation Commission of Michigan, at its April meeting, dedicated nine new wild-life sanctuaries comprising a total of 912 acres.

Education and Extension

Michigan Features Forestry Train Over Pennsylvania Lines

The extension department of Michigan State College featured a forestry train over the Pennsylvania lines from the 14th to the 19th of April for the purpose of demonstrating to the owner of idle land how such land may be changed from a liability to an asset. The "Reforestation Special" was the first train of its kind in Michigan. The train consisted of three baggage cars for exhibits, one lecture car, one express car for carrying trees and lighting equipment, and one business car.

Every county traversed by the train has plenty of land which is better suited to forests than to farm crops. The purpose of the train was to demonstrate to the farmer and the landowner how best to put such land in profitable tree crops. The extension department had been working on the exhibits for some time and prepared object lessons showing every possible planting phase. Farmers and others were able to see actual plantings in miniature. The Michigan State College forest nursery furnished trees for the display which showed possibilities in selecting and grouping

various tree species and the planting spacings advocated. Those interested in controlling blow sands found an exhibit depicting this phase of tree planting. Another feature was the farm windbreak, showing varieties of trees to use, arrangement, and benefits received.

In addition to the tree-planting exhibits, there was a display featuring a new organization for rural boys and girls called the Michigan 4-H Forest Rangers. From just a few members this movement has gained to over 200 in a year's time. Other displays showed the uses of wood, especially the possibilities of growing white spruce for paper. One educational exhibit showed all of the steps in paper making.

Other cars contained fire-prevention displays, reforestation along public highways, and proper handling of the farm woodlot. The Conservation League of Michigan had a car displaying live game and predatory animals. Recreational use of forests was featured by the Michigan Tourist and Resort Association.

At each stop an appropriate program was given, consisting of short illustrated talks and moving pictures. School children had written essays on the subject Why Reforest. At each stop along the line for the

best essay submitted there was awarded a prize of a fine young spruce in a tub ready to plant.

Trees on ice were carried in the baggage car for distribution to those who had ordered planting stock. Experts accompanied the train to explain the exhibits and answer questions in regard to tree planting and other phases of forestry. Some 300,000 pine seedlings were distributed by the "Reforestation Special." So great was the demand in the communities touched by the special that extra loads of seedlings had to be rushed via airplane.

Fire Campaign Launched in California

"Fight Fires with Forethought" was the slogan of the campaign which began in Kern County, Calif., on the 1st of March, to continue until June 1. This campaign was conducted by the agricultural extension service and the State division of forestry in 41 communities in 13 California counties for presentation of the essential facts of rural fire protection. Woodbridge Metcalf, extension forester, and J. P. Fairbank, specialist in agricultural engineering, carried on the demonstrations and reported increasing interest in fire protection. A ranger or inspector from the State division of forestry assisted at each of the meetings.

Various types of hand tools and back-pack water pump outfits were displayed and proper methods of use in attacking fires shown. Each meeting closed with a demonstration of one of the new State tank fire trucks, which proved so effective in combating fires last season that four additional outfits are under construction now. The truck was shown pumping two streams from a reserve supply of water and also with two small streams from spray nozzles using water from the 225-gallon tank on the truck. The latter method is that used in fighting grass and grain fires.

An important feature of the demonstration was a set-up of two miniature slopes of soil to show the effect of fire on the water supply. One slope was protected by the natural humus cover of the forest and brush fields, while the other was unprotected. Two quarts of water were applied to each, with the result that the humus-covered area showed percolation of the water, while most of that applied to the unprotected slope ran off the surface as a muddy flood. The importance of community clean-up of fire hazards in advance of the fire season was stressed and attention called to the effective work along this line being carried on by the State division of highways in applying Diesel oil and burning off grass and weed cover along roads through important range and grain districts.

The demonstrations during the month of April were carried on in the San Joaquin Valley and foothill counties.

Georgia Farm Boys Learn Farm Forestry

The Georgia State Board of Vocational Education has now included vocational forestry in the course of study of each of the 150 schools where vocational agriculture is being taught, according to the Georgia Farmer and Fruit Grower. The course in forestry has been developed in cooperation with the Georgia Forest Service.

To make the instruction of practical value, each of these schools has a woodland of at least 10 acres, which serves as a laboratory where practical forestry management is demonstrated by the teacher of vocational agriculture and by technically trained foresters. These school forests are leased by the owners to the trustees for a period of 10 years. During this time any income derived from the tract goes to the owner, but he has nothing whatever to do with policies of management. These policies are outlined by a representative of the State forest service and are carried out by the boys in the agricultural classes of the school where the tract is located. Each of these school forests has been studied by an expert of the State forest service and a map of it has been drawn to scale. This is a part of the working plan which the boys on each individual tract are to follow. Study material for use in forestry classes is obtained from the Georgia Forest Service, the United States Forest Service, the Georgia State College of Agriculture, and the American Forestry Association.

The director of education of the Georgia Forest Service says:

Students demonstrating outstanding qualifications as shown by school work will be awarded scholarships to summer forestry camps, where more advanced and practical work in forestry will be given leading to a certificate of vocational forester, which will recommend the holder for one or more of the positions of forest ranger, fire warden, timber cruiser, log and lumber inspector, superintendent of sawmills, manager of turpentine operations, superintendent of State forest parks, and other nontechnical forestry jobs.

Texas Forest Service Does Effective Educational Work

Public sentiment in favor of forest-fire prevention is becoming crystallized in east Texas, the State forest service reports, as the result of educational activities by which the service has brought local problems of forest protection to the school children and to the adult citizens of the timbered region throughout this part of the State. These activities include lectures at schools, churches, forestry meetings, and rural gatherings. The lectures have been supplemented by motion pictures showing the development of the tree from seed to maturity, the products and by-products obtained from trees, destruction by fires and means of prevention of such damage, and illustrations of tree farming and tree

crops. Charts and maps are also used as illustrations, and bulletins on forestry subjects are distributed.

A specially constructed Ford car is used in transporting the moving-picture apparatus and the publicity material. This car is equipped with a generator and batteries for supplying current.

Educational work is also carried on in this part of Texas by the field force of 54 patrolmen, lookout men, and smoke chasers. During 1927 and 1928 these men made fire-prevention talks at 2,300 schools to 129,400 school children and teachers throughout the greater part of the piney woods region of east Texas. To these pupils 86,932 pieces of forestry literature were distributed, as were also more than 60,000 school-book covers carrying a forest-fire protection lesson. During this period the fire-protection force had over 46,000 personal interviews with farmers, stockmen, campers, and loggers, to whom 47,000 fire-prevention posters and circulars were distributed. Fire-prevention activities were further extended by the protection force in posting over 58,000 cardboard and cloth fire-warning signs on the roads and highways in east Texas. At the more strategic points 170 large metal-framed fire-prevention signs and 100 smaller fire signs were put up.

County Agricultural Programs for North Mississippi Include Farm Woodland Management

Farm woodland management is an important part of county agricultural programs in north Mississippi, according to D. E. Lauderburn, extension forester, and L. A. Olson, district extension agent.

The extension forester has outlined plans for future work with 14 north Mississippi agents. In most cases the work will be started with a survey of the farm woodland resources and conditions and a study of the markets for farm woodland products, in which survey the county agent will be assisted by the extension forester. These surveys will be made this spring and summer and plans will be perfected for demonstrations and campaigns for the coming fall and winter. The kind of demonstrations and campaigns to be planned will be determined by the needs in each county. Demonstrations may cover such activities as timber estimating, thinning, improvement cutting, selection cutting, planting, establishment of tree nurseries, determination of rate of growth and probable future yield, firebreak construction. Campaigns for fire protection and for the reclamation of eroding lands may be included in the plans for farm-woodland development and the utilization of waste farm areas.

In addition to the reclamation of eroding lands by planting, there are the important problems of protecting from fire the thousands of acres of cut-over woods and the forest growth coming up in abandoned fields, and the improvement of this timber growth by cutting

out the weed trees where possible and the thinning of thick stands.

H. C. Mitchell, assistant State forester, in charge of work in north Mississippi for the State forest service, with his headquarters at Tupelo, is also working with the county extension agents.

American Forestry Association Exhibit Truck Tours East

According to the American Forestry Association, the special exhibit truck of the southern forestry educational project of the American Forestry Association and the States of Georgia, Florida, and Mississippi has made a 4,000-mile tour of the Eastern States. Nineteen States and the District of Columbia were visited, and the truck was on display at the Southern Forestry Congress, at Memphis, Tenn.; the annual meeting of the Izaak Walton League of America, at Chicago, Ill.; and at the annual meeting of the American Forestry Association, at Minneapolis, Minn., April 29, 30, and May 1.

The truck left Marianna, Fla., April 8, in charge of E. P. Simmons, of the southern forestry educational project. It exhibited at Birmingham, Ala.; Memphis, Tenn.; Little Rock, Ark.; St. Louis, Mo.; Louisville, Ky.; Indianapolis, Ind.; and Chicago, Ill. From Chicago the truck went to Madison, Wis.; Minneapolis, Minn.; Cedar Rapids, Iowa; Burlington, Iowa; Springfield, Ill.; Columbus, Ohio; Wheeling, W. Va.; Washington, D. C.; Richmond, Va.; Raleigh, N. C.; Columbia, S. C.; Augusta, Ga.; and finished its tour May 16 at Thomasville, Ga., after which it operated in Mississippi for a month.

The truck, created and designed by the American Forestry Association and the Florida Forest Service, was made possible by a special appropriation by the Florida Forestry Commission. It is ultramodern in equipment, featuring an amplifying unit, electrical displays and motion pictures. On exhibit in Florida during the winter it was viewed by more than a half million people.

Boy Scouts Render Woods Service

As a reward for useful forest work, a Boy Scout troop of Everson, Pa., received a meritorious service medal early in April. The award was made upon the record of the troop, which shows that during the week beginning June 24 of last year it did good service on forest lands by removing brush, leaves, and other inflammable material from community picnic grounds, and that during four picnics members of the troop patrolled the adjoining woods for a radius of 2 miles to guard against the setting of fire by negligent smokers and hikers. On July 4, also, the troop patrolled the woods near Everson to detect fire set by fireworks. During

the whole 1929 spring forest fire season the Boy Scouts of this troop assisted the forest fire warden in extinguishing several brush fires. Individual awards were made to two members of the troop for special service.

The East Texas Chamber of Commerce Develops Farm Forestry Program

A farm forestry program for the East Texas Chamber of Commerce has been outlined, with special emphasis on the conception of farm timber as a crop and the necessity of its protection from fire. In carrying out this program the officials of the chamber of commerce will maintain close cooperation with the Texas Forest Service and the State extension service.

Alaskan Schools Compete in Forestry Contest

A contest is being conducted in the Alaskan schools for the best essay based on an outline for the study of the forests of the territory distributed in the schools of Alaska last year from the United States Forest Service regional office at Juneau. The prizes in this contest, offered by the American Forestry Association, will be a bronze medal to the pupil submitting the best essay in each division and a larger bronze medal mounted on a walnut block to the school in each division from which the winning essay originated. The successful pupil will retain possession of the smaller medal and the

mounted medal will be kept by the winning school for one year and sent to the school winning in the subsequent year. It will become the permanent possession of a school if won three years in succession. All white schools—Territorial, Bureau of Education, parochial, and mission—are eligible. Any pupil, of the eighth grade or under, who is a regular student of such schools and has taken at least 10 lessons in the "Outline for the Study of Alaskan Forests" and made at least two field trips under the direction of the teacher, may compete for the individual medal.

The subject of the essay is to be selected by the individual pupil to cover some phase of Alaska forestry or wild life. Although the essay contest is based on the "Outline," competitors may avail themselves of any authoritative information on the subject discussed. The importance of this study has been emphasized in letters and bulletins sent to superintendents and teachers. The governor of the Territory is sponsoring this educational contest and has presented the project in person in many villages of southeastern Alaska. A similar contest was held in the schools of Alaska during the school year 1928-29, based on the same course of study.



The Harvard Forest, consisting of 2,100 acres has cut over 4,000,000 feet of timber since 1908. During the last five years the gross income has averaged \$15,000 a year and the net income has averaged \$3,000 a year.

Forest Service Notes

Regional Foresters Meet in Washington to Discuss Problems of National Forests

Regional foresters from the nine national forest regions met at the Washington headquarters of the United States Forest Service, on March 17 for a two weeks' conference with the Chief Forester and chiefs of branches on important problems of national forest administration.

Fire protection was one of the principal subjects discussed. The program included a thorough review of the national forest areas now enjoying satisfactory protection, fairly good protection, or unsatisfactory protection, as a basis for working out a plan of future allotments for fire protection improvements. The Forest Service objective of "safe hour control" requires road and trail systems, detection and communication systems, and equipment and personnel adequate to

enable a sufficient force of fire fighters to reach every incipient fire in time to hold the burned area to a minimum.

Other matters up for discussion included business methods in national forest administration, development work, planting, demonstration projects in timber growing, and special training of the Forest Service workers.

National Forests of Southwest Increase in Area under Land Exchange

In the last eight years a total of 178,773 acres of land has been added to the national forests of Arizona and New Mexico under the provisions of the land exchange act of 1922, according to M. M. Cheney, assistant district forester in charge of Lands, United States Forest Service. Only 7,643 acres of land has been granted in exchange, so that the net gain in acreage to the national forests to date is 171,130 acres.

Aircraft Given Part in Forest Protection Plans

Air patrol for spotting fires is the latest development in the forest protection plans for national forests in the Lake States region, E. W. Tinker, regional forester, announces. Recently he returned from Washington with the first Federal allotment for permitting contracts for hire of airplanes for fire detection.

Hydroplanes were used for fire fighting last summer in the northern part of the region, Mr. Tinker said, but this is the first air patrol planned for the national forests in this region and the nine Federal purchase units on their way toward becoming national forests.

Planes will be used particularly during periods of heavy smoke when visibility from lookout towers is limited. The numerous bodies of water in the national forest areas afford natural landing fields for planes, and fires which are invisible to the lookout in his smoke-screened tower can be readily spotted from the higher altitudes.

In addition to use of planes for fire detection, the plan followed last year of transporting small crews of men with equipment by plane, will be followed. This plan, enabling quick action, according to the regional forester, saved the Government many thousands of dollars last year and prevented the burning over of hundreds of acres of national forest land.

Representatives of Lake States Land Economic Surveys Confer

Representatives of the land economic surveys in the three Lake States met in the State Capitol at Madison, Wis., on Saturday, April 19.

The object of the conference, which was called by the director of the Lake States Forest Experiment Station, was to decide on a method for collecting volume and growth data in connection with the land economic survey work. Heretofore little has been done in forest mensuration on the surveys, and each State has used a method or system of its own. It is obvious that such procedure would not give comparable results. This meeting was therefore called to decide on a common method for collecting the timber data. The following method was adopted:

The timber data will be gotten from a strip survey instead of from sample plots.

The diameter of all the trees that are 4 inches or more will be measured with calipers at a point $4\frac{1}{2}$ feet above the ground. If the average diameter of the stand is between 3 to 6 inches, the strip will be $8\frac{3}{4}$ feet wide. If the diameter is 6 to 9 inches, the width of the strip will be $16\frac{1}{2}$ feet and for average diameters that are 9 or more inches, the strip will be 33 feet

wide. The strip crew will work on areas that have already been mapped; it will then know the area of the types it is in and the lengths of the strips in each type.

The trees will be tallied to 1 inch diameter classes. Each fiftieth tree tallied will be a sample tree and its diameter will be recorded separately also to a tenth of an inch.

The sample trees will also be studied for information on growth. The total age at breast height will be gotten, and the number of years required to grow the last $1\frac{1}{2}$ inches in radius. The total height of the tree will be measured with a hypsometer and the average height growth for the last 10 years will be recorded.

If the average diameter of the stand is 3 inches or less, the percentage of stocking will be determined, considering the distribution over the area.

Dead and down timber will be tallied separately, when it is still sound.

Notes will be made on the ground cover, and the Bureau of Soils classification of the soil will be given.

It was suggested at the meeting that the Lake States Experiment Station make yield tables for three site qualities that will be applicable for the three Lake States.

When the foregoing work has been done, it will be possible to go onto a tract of land and state its timber-growing possibilities for the various native species. Such a statement of timber-growing possibilities would not be a mere conjecture, but it would be based upon knowledge derived from past investigation.

Besides their use for statistical purposes, these data will be a basis for placing values on such lands which do not have any information as to the agricultural crops raised upon them. By using the soil classification and then getting the timber-growing possibilities on the land its value can be determined. This value will be based upon the land's ability to yield an income. It will not be based upon boom prices or high-powered salesmanship.

Progress in Insect Control Work in the Northern Rocky Mountain Region

About 300 men are now employed on the Coeur d'Alene National Forest insect-control job. Most of these are engaged in spotting infections or in establishing camps for the crews to be employed in treating work which is just getting under way.

Spotting work on the Clearwater National Forest is pretty well finished, and it is certain that the job there will be very much less than was anticipated. As nearly as can be determined the number of trees to be treated will amount to only about 500. This will make possible the transfer of a considerable part of the Clearwater force to the Kootenai Forest, where they are

badly needed. W. E. Buckingham is in charge of the work, assisted by G. M. De Jarnette.

R. E. Fields is in charge of the control work on the Kootenai, where it is reported that treatment on a number of small units has already been completed. The job here involves five or six different drainages and several camps. Treating work is well under way.

Tree Planting Season Opens

About 1,250,000 trees will be planted in the national forests of Colorado and Wyoming this spring. The first planting camp was opened on April 15. Douglas fir and western yellow pine will be used almost exclusively.

The trees for the 1930 planting in the Rocky Mountain region were raised at the Monument Nursery, located near Monument, Colo. This is one of the largest evergreen nurseries in the West. The purchase of land needed for the expansion of the nursery, which was authorized by Congress in 1928, was recently consummated. When this nursery land is developed it will be possible to raise 2,000,000 trees for distribution annually. More tree planting is necessary to make headway on the large burns in the national forests of this region. These burns total 900,000 acres in Colorado and about 100,000 acres in Wyoming.

Sign Mutilation Runs High on National Forests in East

Because so many persons see the road and trail and boundary signs on the national forests as handy targets for a display of marksmanship, as suitable places for carving their initials, or as objects for some other form of mutilation, the Forest Service, United States Department of Agriculture, is put to added expense in maintaining its signs and markers on the national forests for the benefit of the public.

A sign survey just completed on the national forests of the eastern district showed as high as 89 per cent of the signs mutilated on one forest, two years after they had been erected. For 13 national forests in the region, the percentage of signs found mutilated at the end of the second year averaged 26 per cent for road signs, 17 per cent for trail signs, 50 per cent for gibbet boundary signs, and 18 per cent for other signs.

At the end of the first year, 16 per cent of the road signs were mutilated, 9 per cent of the trail signs, 47 per cent of the gibbet boundary signs, and 14 per cent of the other signs.

Congress Provides for Forest Products Laboratory Buildings

The Secretary of Agriculture is authorized by act of Congress which became law on April 15, to accept land offered by the regents of the University of Wisconsin as a site for the construction of a building or buildings to be used by the forest products laboratory of the United States Forest Service, at Madison. The act also authorizes an appropriation of \$900,000 to cover the cost of constructing and equipping laboratory buildings. The Senate added an amendment to the pending Department of Agriculture appropriation bill making this authorized amount available during the fiscal year 1931.

Visitors to the National Forests During 1929

A total of 31,758,231 visitors made recreational use of the national forests of 25 States, Alaska, and Porto Rico during 1929. Three-fourths of these visitors to the forests were transient tourists, while picnickers, campers, hotel and resort guests, and special use permittees made up the other fourth in the order of numerical rank. Seven out of every eight traveled in automobiles. The California region had more than half of all such users of the national forests, Colorado and New Hampshire had more than 2,000,000 visitors each, Oregon had nearly 2,000,000, Arizona, New Mexico, and Washington, more than 1,000,000 each.

Deficiency Appropriation Made for Forest Fire Fighting

The first deficiency appropriation, approved and signed by the President on March 26, made available among other items, \$3,300,000 for expenses incurred in fighting forest fires on the national forests during the past year, \$45,000 for fighting forest fires on the Indian reservations, and \$180,000 to start work controlling forest insects on certain national forests in the northwest.



On May 1, 1930, the boundary line between the eastern national forest region and the Lake States region was modified by including in the latter the States of Iowa, Missouri, Illinois, Indiana, and Ohio, which were formerly within the eastern region. This change does not affect the existing territorial divisions in research and Clarke-McNary Act inspection.

General Forest News

Southern Forestry Congress

The Twelfth Southern Forestry Congress was held at the Peabody Hotel, Memphis, Tenn., April 10, 11, and 12, with President George T. Houston, of George T. Houston & Co., Memphis, Tenn., presiding. R. S. Maddox, State forester, Nashville, Tenn., acted as secretary.

This congress was one of the best attended meetings of the series to date, with a registration of 250, 168 of whom were from outside of Memphis. At the four regular morning and afternoon sessions a large number of papers were presented, including among others the following subjects: Conservation of Forests, Waters, and Soil, by E. A. Sherman, associate forester, United States Forest Service; Possibilities of Securing New Crops of Timber in the South, by E. L. Demmon, director of the Southern Forest Experiment Station; Our Forest Needs, by Dr. Wilson Compton, secretary-manager, National Lumber Manufacturers' Association, read by D. R. Brewster, district manager of the association, Memphis; Continuous Operation from Second Growth Timber, by C. W. Strauss, secretary, Malvern Lumber Co., Perla, Ark.; Growing Timber as Security for Long Term Loans, by W. L. Hall, president, Hall-Kellogg & Co., Hot Springs, Ark.; Forest Fires in the South, by James D. Lacey, president, James D. Lacey & Co.; Relation of Private to Public Responsibility in Forest Fire Protection, by Page S. Bunker, State forester of Alabama; Money Handled by Banks in Connection with Forest Products, by J. J. Heflin, vice president, Union Planters National Bank & Trust Co., Memphis, Tenn.; Forest Legislation, by G. H. Collingwood, forester, American Forestry Association; Forest, Game, and Wild Life, by W. B. Bell, United States Biological Survey; Utilization as a Stimulus to Industrial Forestry, by R. D. Garver, United States Forest Products Laboratory, Madison, Wis. Herbert N. Wheeler, United States Forest Service lecturer, gave an illustrated lecture on forestry and land use at the close of the afternoon session on the first day.

Mr. Sherman cited in his address the results of actual experiments which indicate that even on a grass or forest slope of less than 4 per cent, 22,000 cubic feet of water per annum is saved to the acre that would be lost by surface run-off from every acre of a fallow area

of similar slope. When applied to a township, he said, this means 500,000,000 cubic feet of water, and to 10,000 townships, the effect of vegetative cover measures 5,000 billion cubic feet of water. Obviously, he said, it makes a tremendous difference in the regimen of a drainage course whether its volume of moisture is transmitted to it as immediate surface run-off or as the steady flow of perpetual springs.

"The flood problem," Mr. Sherman said, "will not be solved until floods no longer take place. Floods are an evil not merely because of what they do but because of what they are. The settler along the lower Mississippi fleeing for his life knows the flood merely as a criminal from its assault on his life and property. But in addition to being a criminal assailant, the flood is also a thief which has stolen from the lands of the farmer farther up the valley his richest soil, fabulous treasurer of nitrates, the water needed by the farmers of Oklahoma, Kansas, Nebraska, and points north for their crops, and power which if appropriately harnessed would turn wheels for a great industrial population. And this great raging thief is possessed of a maniacal idea of burying all his stolen riches in the sea beyond man's reach or hope of recovery."

Mr. Demmon, in discussing forestry possibilities in the South declared that by no stretch of the imagination can it be conceived that the estimated 190,000,000 acres of potential forest land in the South will be needed for agriculture for many years to come. A certain part of it may be found profitable for the production of cattle and other livestock, and a small percentage of it will be cleared for agriculture, but the remainder, the speaker maintained, if allowed to lie idle or to produce only a fraction of its potential capacity must react to the detriment of the entire region. On the other hand if these lands can be made to return a profit to the owners, he predicted the stabilization of communities, the perpetuation of industries, and the provision of work for a considerable proportion of the population, making for widespread and well-founded well-being.

State Forester Page S. Bunker, in comparing the relation of private and public responsibility in forest-fire protection traced his interest in the longleaf pine forests of the South back over a period of 50 years to the time when there were but few lumber industries below the Mason and Dixon line other than coast mills

for export and small sawmills for local demand, when the Lake States were the center of production, and white pine was the criterion of value. He told of the gradual and rather reluctant migration of white pine lumbermen to the southern forests, of the small understanding and appreciation of these resources carried over from their former experiences, of the unchecked menace of forest fires, and of the poor management which helped to "kill the goose that laid the golden egg." As an offset to these past adverse conditions he expressed it as his opinion that all forward-looking agencies in the South to-day are united in the suppression of forest fires, but that there will be for many years a clinging to old customs, and that incendiary and malicious burnings will continue until ruthlessly suppressed. "This calls for the combination of State and Federal fire protection," he said, "with intensive patrol, lookouts, fire lines, fire-fighting equipment, and organization on individual properties under forest management. It is probably too soon to expect intensive State control, but private owners who vision the future of forest production can largely control their own destinies."

Throughout the conference special stress was laid upon hardwoods, with the meeting culminating in a field trip to one of the hardwood parks, of Memphis, where a unique timber estimating contest was staged by Mr. Brewster. Approximately 2 acres of old-growth hardwood had previously been estimated by two expert cruisers, the sealed estimates being broken at the conclusion of the contest and the two averaged to serve as the measure of efficiency. It was a matter of considerable interest that the six prizes were awarded to four men engaged in the manufacture of hardwoods and two college professors.

A feature of the Congress was a series of exhibits near the entrance to the hall, with striking "before and after" illustrations, which gave special emphasis to the reclamation of gullied lands in Tennessee, in which State Mr. Maddox has been actively engaged for many years.

W. C. McCormick, director of the Southern Forestry Educational Project of the American Forestry Association, featured the program of an evening session with a detailed report of the cooperative educational projects now being carried on in Mississippi, Georgia, and Florida, illustrated by several forestry films used in the work. A forestry news reel directed and photographed by Mr. McCormick was one of the features of this entertainment. The new Florida forestry exhibit truck was available for inspection and received a great deal of favorable comment. This truck was on its way from Florida to Minnesota for exhibition at the annual meeting of the American Forestry Association at Minneapolis April 29 and 30 and May 1.

The following officers were elected for the ensuing year: President, Albert L. Strauss, president of the Malvern Lumber Co., Perla, Ark.; vice president,

W. L. Hall, president of Hall-Kellogg & Co., Hot Springs, Ark.; secretary, W. H. Brooks, of the Arkansas Pine Association, Little Rock, Ark.; assistant secretary, L. E. Bodie, Arlington Hotel, Hot Springs, Ark. The meeting place selected for the next congress is Hot Springs, Ark.

The following resolutions were adopted by the Southern Forestry Congress:

1. Whereas the rapid depletion of the hardwood stands in the South is constantly increasing the amount of idle cutover land and will eventually impair very seriously the foremost position of this region which produces approximately two-thirds of the hardwood timber requirements of the entire United States; and

Whereas we believe that a thorough knowledge of the problems of forest management, forest utilization, and profitable use of idle land in this southern hardwood region is urgently needed and can best be obtained through an adequate program of forest research.

Resolved, That we urge Congress to provide funds for this purpose, to be made available at the earliest possible date.

2. *Resolved*, That we recommend the practice of selective logging to all southern timberland owners in the belief that this method of cutting offers one of the best means of keeping forest land productive and of assuring the permanency of the forest industries of the South.

3. Whereas the forest fire weather warning service of the United States Weather Bureau has been successfully functioning in several forest regions of the United States for a number of years; and

Whereas we believe that similar service would be of great benefit in the Southern Appalachian and surrounding territories; and

Whereas authorization for preliminary investigations into the relationship of weather conditions to forest fires is contained in section 6 of the McSweeney-McNary forest research act.

Resolved, That we urge the Secretary of Agriculture to provide in his estimate sufficient funds for this work at the earliest possible date.

4. *Resolved*, That we earnestly request the Secretary of Agriculture to allot increased funds for investigations by the Bureau of Entomology leading to the control of harmful forest insects in the South.

5. Whereas the relation of forests to the regularity of streamflow is as yet little understood.

Resolved, That we urge the Secretaries of Agriculture and Interior to provide for investigations of this subject in the southern Appalachian regions by appropriate Federal bureaus in cooperation with the States.

6. Whereas considerable areas of devastated land are now unremunerative, we recommend that such of these lands as can not profitably be put in productive condition by industry be acquired by public agencies for such public purposes as may be necessary and desirable.

7. Whereas it appears that the great problem of controlling the floods of the Mississippi River can only be solved by the adaptation and coordination of four principal remedial measures—namely, (1) levees, (2) spillways or by-passes, (3) reservoirs, and (4) forests,

Resolved, That we urge the concurrent use and prompt adoption of all of these measures, each in its proper field, without waiting for the final completion of the others. Just as levees, dams, and spillways may all be undertaken simultaneously, each as the

necessary part of a comprehensive plan, so the program of forest protection and development should be promptly and energetically carried forward, with proper consideration also to the protection and conservation of the forests of the lowlands.

8. Whereas tree-killing insects are exacting an annual toll from our national forests comparable to that caused by fires, and,

Whereas the present methods of financial control delay action by 12 to 18 months after the situation is recognized as critical,

Resolved, That the Southern Forestry Congress urges studies which will lead to the drafting and passage of a law which will make possible the authorization of funds to allow immediate attack upon forest destroying insects.

9. Whereas the resources of the national forests are annually in danger from fire, and

Whereas the present systems of roads, lookout towers, and other permanent improvements are inadequate to the magnitude of the situation,

Resolved, By the Southern Forestry Congress, that the plan embodied in pending legislation authorizing annual expenditures for such improvements on national forests, has its indorsement, and this body urges the early passage of this bill by Congress.

A resolution was offered in regard to the tariff on lumber which failed of passage on the ground that the subject was not germane to the proceedings of a conservation congress.

Fifty-fifth Annual Convention of the American Forestry Association

The American Forestry Association held its fifty-fifth annual convention at Minneapolis, Minn., April 29, 30, and May 1. Alexander Legge, Chairman of the Federal Farm Board; Glenn Frank, president of the University of Wisconsin; Theodore Christianson, Governor of Minnesota; and other nationally known speakers were on the program.

Forest problems of national character were discussed, but the keynote of the convention was the consideration of problems affecting the Lake States. Major attention was given to forest-fire prevention and control, reforestation of cut-over lands, forest taxation, forest research, and wild-life problems. An exhibit truck used in the association's southern educational project now in its second year in Georgia, Florida, and Mississippi, was shown at the convention, and its use and equipment were demonstrated.

A field trip to Cloquet, Minn., was made on the closing day. The city of Cloquet is a forest-supported community and is reputed to be the most diversified wood-fabricating center in the United States.

The president of the American Forestry Association, George D. Pratt, and the mayor of Minneapolis made brief addresses at the opening session. The Governor of Minnesota spoke on The State's Responsibility in Safeguarding Its Natural Resources. Other speakers included Nils A. Olsen, Chief of the Bureau of Agricultural Economics, United States Department of Agriculture, who spoke on Deforested Land—A Challenge

to American Welfare, and Ward Shepard, forester, National Conservation Committee, who presented a paper on Forest Reconstruction.

At the afternoon session of the first day the speakers who discussed the various phases of the general subject—The Land and Forest Situation in the Lake States—were Raphael Zon, director of the Lake States Forest Experiment Station; Benjamin H. Hibbard, of the University of Wisconsin; Alexander Legge, Chairman of the Federal Farm Board; and Mrs. Sam A. Rask, president of the Minnesota Federation of Women's Clubs.

At the annual banquet, Lotus D. Coffman, president of the University of Minnesota, acted as toastmaster, and the speakers were Stafford King, chairman of the conservation committee, American Legion, and Glenn Frank, president of the University of Wisconsin.

Glenn Frank in his address on Forests and the Future of America asserted that the conservation movement is a comprehensive challenge to all the varied forces of our commonwealths—public and private, social and scientific. "Conservation," he said, "is not a venture that can be reduced to any single effort or be farmed out to any single agency. The business man, the banker, the legislator, the scientist, the educator—all have a part to play and the whole American public must create a compelling atmosphere of devotion to the cause of conservation that will bring every laggard into the ranks."

"We are not suffering from lack of an intelligently conceived conservation program," he continued. "The experts, scientific and economic, have done their jobs admirably. We are suffering from lack of a conservation mind. The primary task of the conservationists is to transform the millions of hand-to-mouth-day-to-day Americans into a conservation-conscious people, to create a public mind that is forest wise. Back of the legislative and technical engineering that must enter into the administration of a forestry program, there is a vast deal of spiritual engineering that must be done to insure the creation and continuance of a comprehensive and statesmanlike policy."

President Frank discussed the factors that he believed should enter into an effective forestry program: (1) The development of public forests—national, State, and municipal; (2) working cooperation between the Government and private owners of timberlands that will make reforestation economically feasible, involving fire protection and equitable taxation; (3) the maintenance of a constant and comprehensive research and information service from State or Federal laboratories to the private owners of forest lands; and (4) the exercise of some degree of public oversight of forest lands, even when privately owned, to insure a continuing productivity.

"There are a hundred and one technically detailed elements that must enter into an intelligently conceived forestry program," President Frank said, "The

four elements I have mentioned would seem, however, to be minimum starting points of policy. If, throughout this Lake region, we could act fully on these four fundamental policies, I think we should realize an unimaginably rich return on our efforts."

The two sessions of the second day's program had as their general subject: Solution of the Lake States Problems. The various phases of this subject were discussed in addresses by George Bishop of the Upper Peninsula Development Bureau, Michigan; R. Y. Stuart, Chief, United States Forest Service; William Mauthe, chairman of the Wisconsin Conservation Commission; W. A. Holt, president of the Holt Lumber Co., Wis.; Paul Hansen, of the firm of Pearse, Greeley & Hansen, Chicago; Frank A. Waugh of the Massachusetts Agricultural College; Paul G. Redington, Chief of the United States Biological Survey; and Albert Stoll, jr., of the Detroit News.

The primary objectives of the Federal Government in its forest land acquisition program in the Lake States were pointed out by R. Y. Stuart, Chief Forester, in an address on Federal Acquisition as a Lake States Antidote. The Chief Forester declared the major objectives of the Government in its Lake States acquisition program to be the promotion of forest growth, improvement of waterflow conditions, and, closely affiliated with these functions, more facilities for outdoor recreation and for wild life conservation.

"In working toward these objectives," he said, "the tracts purchased will be developed and used to demonstrate sound forest practices and the coordination of forestry with other forms of land use. This will require effective methods of fire control, adequate systems of forest improvements, forest planting, improvement cuttings, and the application of the sustained yield principle of management. Consideration will be given also to recreation and wild life management."

Major Stuart emphasized the fact that the Federal program was complementary to State and private effort, there being no attempt to in any way gain control of the forest land situation in this region. He cited the fact that there are estimated to be 57,100,000 acres of forest land in the three States, of which over half is in a nonproductive or poorly productive condition. There are now four national forests in these States: The Huron, with 237,135 acres; the Michigan, with 27,835 acres; the Chippewa, with 192,350 acres; and the Superior, with 845,406 acres. In addition to the established national forests, four purchase areas have been approved in Michigan, three in Wisconsin, and two in Minnesota, within which not to exceed 2,500,000 acres will be acquired. So that in all, the program of purchase planned, together with the acreage now in Federal ownership, would represent less than 6 per cent of the forest lands in these States.

Reforestation of Poor Land Urged by Farm Board Head

Restoration of the woodland to the American farm was urged by Alexander Legge, Chairman of the Federal Farm Board, in a recent network radio address. He said:

It should require no great amount of argument to convince the grower that if a somewhat reduced production would result in bringing him more money than he now is getting with a larger production, it would be foolish for him to expend the time and labor and to exhaust the fertility of his soil in producing that excess when the result of such excess production would be only to bring him a lower financial return than he might have had by adjusting his production downward to a point where the consuming demand would absorb what he grows at a reasonable price.

The percentage of decrease in production of most commodities, if properly distributed—that is, if the reduction were made by all producers—would not be sufficiently large to seriously change the farmer's present operations. Furthermore, in cases where by the development of new foreign markets or expansion of existing markets abroad as a result of an increase in the purchasing power of consuming countries, it is found possible to dispose of an increased quantity of a commodity, the board hopes to give the farmers this information early enough for them to take advantage of the changing conditions in the planting of their crops.

Meanwhile, we are immediately confronted with what use to make of the present cultivated acreage that would not be required in such a modified program. Many good suggestions have come to the board on this subject. * * * I wish to offer one that seems to meet with very general approval—namely, reforestation.

Most people think of a reforestation program along the lines of large areas, commonly accepted in terms of the future timber supply, but there is another kind of reforestation that is equally important—in fact, more important to agriculture—and that is the reforestation of the so-called "woodlot." In the past the woodlot has played an important part in the prosperity of a large percentage of our farmers. It has furnished shade for livestock in summer and shelter in winter, posts for fences, firewood for the houses, and in other ways been useful to the farmer.

In many areas this woodlot is disappearing. Why not restore it? In doing so we would only be following the example of many of the older nations that in the past have had to meet a similar situation as that now confronting us. If every American farmer were to devote 5 per cent of his present acreage to this form of reforestation he would have gone a long way toward meeting the problem of excess production and at the same time have added materially to the future value of his farm.

The different States have a very important part to play if any campaign to restore the woodland to the American farm is to be successful. That is in the matter of taxation. Some States have already passed legislation exempting from taxation land that is planted for the purpose of reforestation. Other States should do so, being specific to make such exemption apply to the woodland as well as land planted to timber on a strictly commercial basis.

Forest Supervisor Inspects Virgin Islands

At the request of the Bureau of Efficiency, which has been making a study of the Virgin Islands, W. P. Kramer, supervisor of the Luquillo National Forest, Porto Rico, was recently detailed to make a report on forest conditions there. Mr. Kramer's report gives some interesting facts about these island possessions.

There are over 100 islands in this group, which is about 40 miles east of Porto Rico. Most of them are small and uninhabited. Only three of the islands are important: St. Croix, containing 53,000 acres; St. Thomas, with 16,000 acres; and St. John, with 12,000 acres. The topography of these islands is rolling to rough and their highest peaks rise to 1,500 feet elevation. The climate, of course, is subtropical, with a rather even temperature, varying between 70° and 90° throughout the year. The population has been steadily decreasing, and is now about 20,000.

Originally the islands were entirely covered with a stand of tropical hardwoods, which, however, have largely been cut and much of the area is now in a denuded condition. St. John still has some second-growth timber and a number of slightly culled virgin areas, but on the other islands the forest areas have now been largely taken by brush. St. John is the center of the bay rum industry for which some bay forests are being grown, but this industry has been on the decrease in recent years.

The main agricultural crop is sugar cane, although a beginning has been made in raising vegetables and citrous fruits. Cattle raising also assumes some importance. Approximately half of the islands, or about 40,000 acres, is suitable only for the production of forest crops. Supervisor Kramer reports that about 20,000 acres of this forest land can be brought back by protecting it against fire and grazing, but the rest must be planted.

Federal Control of Land Favored in Report of Oregon Committee

Retention by the Federal Government of unreserved public lands, provided the Government will agree to place regulation of grazing privileges on such lands under the United States Forest Service, is favored in a report recently made public by the Governor of Oregon. The report was compiled by a subcommittee of an Oregon committee appointed by the governor to obtain a cross section of Oregon opinion on the proposal to turn over the surface rights of unreserved public lands to the western State.

Approximately 13,000,000 acres in Oregon would be affected by the proposed action, of which about 11,000,000 acres, chiefly grazing land, is in the south-eastern quarter of the State.

The subcommittee which drafted the report is composed of R. G. Callvert, chairman; William Duby, Robert N. Stanfield, Olin Arnspiger, and W. B. Snyder.

The following are some of the recommendations of the subcommittee:

That by reason of administrative machinery the Federal Government is best equipped to supervise and regulate the lands involved; that the Forest Service should be enlarged into a forage preservation and utilization bureau, and that the grazing lands should be attached to the forests and that the forest system of grazing permits be extended to these areas.

That transfer to the States of barren Government lands should not be considered as recompense for loss to the State of taxable wealth through use by the Federal Government of natural resources of national forests, Indian reservations, national parks, and other reserved lands.

That Oregon and other Western States should receive the equivalent of taxes on reserved Government land.

That before lands are accepted by the States, certain areas should be withdrawn to protect watersheds and present and prospective reclamation.

That sale by the State of the ceded lands should be opposed to prevent private landholding monopolies and their use should be restricted to leasing or grazing rights.

That if subsurface rights are granted, States with petroleum resources would benefit at the expense of the general reclamation fund, of which Oregon is a beneficiary, and Oregon should have an adjusted compensation through adequate division of the proceeds of Government timber sales.

That all Federal land matters should be consolidated under the Secretary of Agriculture.

Round Table Conference on Natural Resources Held by United States Chamber of Commerce

At its annual meeting in Washington, D. C., April 28 to May 2, the Chamber of Commerce of the United States held a round table conference on the subject, What's Ahead for Business in the Natural Resources Industries? Col. William B. Greeley, former Chief Forester of the United States, and now secretary and manager of the West Coast Lumbermen's Association, acted as chairman.

Colonel Greeley outlined the problems of the lumber industry. He said that the pioneering stage is past, that a new era of industrial efficiency is at hand, and that to-day a current adjustment of production to consumption is necessary. This can be achieved, he said, only through consolidation of the units comprising the industry, at least in the Pacific Northwest. The smaller units must go if the industry is to hold its own. Rationalized production and distribution are essential.

On the north Pacific coast there are 700 individual sawmills cutting 14,000,000,000 feet annually, a pro-

duction which is 25 per cent less than their installed capacity. There is 40 years' supply of stumpage behind them. Under the rising pressure of increasing expenditures due to the construction of roads, schools, etc., in the mill communities, a heavy burden of taxation is being imposed upon these mills, consequently they are being forced to convert stumpage into cash as rapidly as possible. Many of the weaker units are being forced out of business in this process. Not only does the industry lose from continued overproduction, which continues in bad years as well as in good, resulting in the bankruptcy of the smaller operators and causing losses to all, but the public is also the loser, Colonel Greeley said. Unemployment and instability of employment result, in a region where the lumber industry furnishes 60 per cent of the pay roll. This leads to suffering in the communities dependent on the industry. The public loses further through the waste of this natural resource. Forty to fifty per cent of the raw material is lost in slash fires and mill waste attendant on the necessary wasteful utilization of only the best grades of timber.

Another public loss occurs, Colonel Greeley said, because the reforestation of cut-over lands is handicapped by the recurring periods of instability. Reforestation under present conditions is too costly from all angles. The tendency is to leave such lands for taxes, since until present uncertainties are removed there is no justification for holding. All manufacturers are not agreed that the solution is along the line of concerted action; some believe in the idea of the "survival of the fittest." But the general belief is that a solution through concerted action is possible.

Dr. Wilson Compton, of the National Lumber Manufacturers' Association, outlined briefly the plan proposed for joint action of the lumber and wood-using operators representing the industry at large. Through a fact finding agency, said Doctor Compton, a solution of the problem may be arrived at. The aim is to meet the public interest and to help industry to function in a permanent capacity as a producer and supplier of raw materials. The forest situation embraces major problems of timber, land, and labor, Doctor Compton said. The overproduction problem is getting worse. Chaos threatens—a waste of wood, premature cutting, decreasing land values, and other evils.

Public support is needed, he said, for the practice of commercial forestry. A national timber conservation board should be established to study the problem, to find the facts, and make suitable recommendations. It should consist of all those interested in conservation. The objectives of this board should be to declare the facts and to recommend a policy concerning: (a) What are the important assets and liabilities of the industry and what do we lack? (b) What are the basic economic causes of the prevailing conditions of

overproduction of forest products? (c) What remedies through Federal and State activity are needed to aid in industry?

The conference approved a motion that a committee composed of members of all the natural resources industries be formed to study and clarify their problems.

Porto Rico Needs More Forests, Says Kircher, After Inspection

Deforestation has progressed in Porto Rico until it is affecting seriously the economic welfare of the island, says J. C. Kircher, forester of the eastern national forest region, United States Department of Agriculture, who recently returned from a tour of inspection of the forest conditions in the island territory. Many steep slopes which have been put into agricultural crops should never have been deforested, reports Mr. Kircher. Erosion on these slopes has done much damage. The island has been suffering from lack of timber.

The Luquillo National Forest, consisting of 13,500 acres of Government land administered by the Department of Agriculture, contains the only virgin timber remaining on the island. It is probable that there will be no timber cutting in the next year or two, because there is a temporary oversupply of wood for charcoal, the results of the large supply of windfall from the recent hurricane. W. P. Kramer, the local forest supervisor is preparing a management plan for the forest, however, so that as soon as a supply of timber is needed, cutting may commence in an orderly fashion on a permanent basis.

Forest growth is rapid in Porto Rico, Mr. Kircher reports. Saw timber grows at the lower elevations in the Luquillo area in 20 to 30 years. Mangrove forests along the seacoast are handled by the insular government on a 7-year rotation to produce wood for charcoal. Mahogany, although not native to the island, will grow saw logs in from 30 to 40 years.

Originally the island was heavily timbered, but most of the timber has been cut. The remaining timber is largely in the national forest, in several insular forests, and on the coffee plantations, where forest trees are grown to shade the coffee. The main forestry needs of the island are summarized by Mr. Kircher as follows:

1. Reforestation of the high mountain slopes; approximately 220,000 acres above 2,000 feet elevation should be kept permanently in forest for watershed protection.

2. An increased planting program. The insular nurseries now produce about 1,000,000 trees for planting annually. These are distributed to farmers and other landowners or planted on the insular forests. The demand for trees for forest planting is much greater than the insular nurseries can supply, and production should be raised to 5,000,000 trees annually.

3. Establishment of a forest experiment station to carry on research in tropical forestry problems. Ultimately the Forest Service hopes to have an experiment station in Porto Rico, but at present no funds are available for this purpose.

Mr. Kircher reports that territorial officials and prominent citizens in Porto Rico are greatly interested in its forest problems and are convinced that forestry must play a large part in the rehabilitation of the island.

R. M. Evans, assistant regional forester, accompanied Mr. Kircher on the tour of inspection in Porto Rico.

Canary Pine a Tree of Commercial Possibilities in the United States

By BERNARD FRANK, United States Forest Service

Canary pine, or Canary Island pine (*Pinus canariensis*), a hardy native of the Canary Islands, is said to be the ideal tree for the warmer portions of the Temperate Zone.

It has been successfully introduced into the arid portions of South Africa, into Australia, New Zealand, Japan, Chile, Argentina, and Brazil.

The wood is of much strength and durability, making excellent lumber and ties. The tree also produces turpentine but hardly on a commercial scale, as its yield is only one-fourth to one-third that of maritime pine, although seven to eight times that of Monterey pine. Its maximum productivity occurs between the ages of 25 and 50 years.

Canary pine requires but little moisture, either in the air or in the soil. Reproduction requires no shade or nurse of any kind and withstands drought well in the first year. It can be planted in midsummer.

The tree makes fairly rapid growth. Stands planted in Chile average 74 feet in height and 17 inches in diameter in 20 years, and 90 feet in height and 20 inches in diameter in 25 years. Other data show that the average annual growth is 39 inches in height and 0.4 of an inch in diameter. Trees 20 years old average 65 feet in height and 8 inches in diameter breast high, although the range is from 60 to 90 feet in height and 8 to 12 inches in diameter at that age.

In introducing Canary pine, seeding by the broadcast or dibble method or with cones is recommended. Dibbling gives the best results. In broadcasting, the area should be plowed or harrowed before and after sowing.

If planting is resorted to, seedlings rather than transplants should be employed, because of the early development of the taproot. On this account open-root planting is inadvisable.

Planting may be close; a spacing of from 3.3 to 4.1 feet is recommended. In very dry soil the closer in-

terval is preferable. For faster height growth planting in mixture with species of *Eucalyptus* is best.

Once the stand is established, natural reproduction is assured. The trees bear ample seed and possess a high sprouting ability. Twenty-year-old trees bear fertile seed, and that from older trees is 95 per cent sound.

There are many areas in the southwestern portion of the United States in which this species could be experimentally planted. The quality of the wood, the hardiness of the tree, and its fairly rapid growth rate, coupled with its ease of reproduction, make it distinctly promising for cultivation.

Fire Warning Issued to Sky Riders

Col. Clarence M. Young, Assistant Secretary of Aeronautics, of the Department of Commerce, has advised the Secretary of Agriculture that he has sent a letter to all pilots of whom the department has record—some 9,000 in number—calling attention to a provision in the Air Commerce Regulations against the dropping or releasing of any objects from aircraft, which would endanger life or damage property. This would include such things as lighted cigarettes or cigars. Colonel Young has advised the pilots that the penalties which are provided for violations, will be rigidly enforced. The Department of Commerce also sent a similar communication to the various air transport organizations whether they are transporting passengers, mail, or merchandise.

Attention of pilots was called to this regulation as the result of a letter written by Acting Secretary of Agriculture, R. W. Dunlap, which called attention to the hazard to which forests, grass lands, grain fields, and property, are exposed through lighted cigarettes dropped from airplanes. The cooperation of the Department of Commerce in enforcing its regulation should prevent many forest fires and grass fires. With the increased use of airplanes, the fire danger would become greater annually if some restrictions of this kind were not imposed.

The Scenic Airways Co. at the Grand Canyon had all their planes equipped with ash trays for each passenger. This makes it convenient for the passengers to dispose of cigarette butts and matches.

A number of the air transport organizations have posted suitable warning notices in the cabins of their aircraft, and a precaution of that character is proving effective as far as the passengers are concerned, Mr. Young's letter stated. However, such a warning should be provided, he said, by all air transport lines and its observance should be exacted; also, and of equal if not greater importance, the pilots of such lines, including mail as well as passenger, should be given specific instructions for their own observance in the matter of throwing out lighted cigars, cigarettes, etc.

Duty of Landowner and Public in Forest Protection

By A. B. HASTINGS, in Charge of State Cooperation, Federal Forest Service

Who is responsible for the protection of the forests from fire? By whom shall this work be done? First as to responsibility. It is not difficult to prove that many of the benefits of protection of the forests come to the public and not to the private owner as such. This is true in the case of the great beneficial effect that fire prevention and control have upon the run-off and storage of water, and upon the fixation of soil to prevent erosion. It is also true in the case of the strikingly improved conditions for the production of fish and game, and in recreational advantages. The public benefits directly through the stabilization of wood-using industries, through increased land values, and through the general economic development of the community and of the Nation, depending as it does in forest regions upon the continual production of forest crops as contrasted with forest destruction which later inevitably leads to the disastrous breaking up of communities and industries when the lumber companies have "cut out" and must "move on." The public benefits by forest-fire prevention and control and therefore has a large measure of responsibility. Furthermore, the public is frequently responsible for fire occurrence. Of the 41,000 fires reported on protected areas in the United States in 1928, over 50 per cent were attributed to agencies over which the individual landowner had little or no control.

It is not difficult to differentiate the benefits which are peculiarly national from those which are more exclusively State. Through the destruction of vegetative cover by forest fire at the headwaters of the Mississippi, the natural water storage functions of these watersheds is impaired, the run-off is hastened, and a serious flood situation in the whole Mississippi basin is made more serious. Furthermore, soil—good, bad, and indifferent—is carried from the States north to their loss, and deposited later in other States to the south, filling up stream channels and covering the bottomlands. These are primarily interstate or national benefits.

In the increase of taxable values through the prevention and control of forest fires, the public, as represented by the State, benefits first. In this case, however, as also in the case of recreational improvements and general economic development, both the Nation and the State receive substantial returns. The Nation has a very real interest in the adequate production of wood materials of desirable quality and quantity wherever these wood materials are produced.

Each fire loss that occurs effects a definite reduction in the prosperity of the Nation. It is a positive disadvantage to many millions of people. Just as truly as that the impulse from the dropping of a single pebble in the ocean extends to the farthest bounds of that ocean, so the impulse from each single destructive fire attacks the economic and social well-being of the whole Nation.

The public, Nation, and State, is then responsible. So also, however, is the individual. To him come the most direct benefits from the protection of his forest lands from fire. In addition to sharing the general benefits which come to all, to him comes the gain from stimulated and sustained production of products which he himself can sell. Further, he is not blameless in the matter of fire occurrence. Nearly half the fires are caused by him. Is it not clear then that the Nation, the State, and the private owner have a community of responsibility?

In answering the question by whom shall the work be done, it is indeed fortunate that we have such abundant experience to serve as our guide. The method of depending upon everybody and especially upon the landowner himself to handle the forest fire situation has been diligently tried in this country from the earliest days and with what lack of success! Nor is it surprising that we are unable to depend upon the average citizen and the private landowner to handle this situation. He may have a real interest but not recognize that interest. Furthermore, he may know that his is not the responsibility for the fire occurrence and that others will benefit sometimes even more than he by fire control. Finally he knows that by himself he can not adequately handle the job. He has, however, a most important part to perform.

The prevention and control of forest fires can not be accomplished economically and effectively except by the joint efforts of public and private agencies. Group action is essential to success. Each effective protective working unit will, generally speaking, embrace not single but several ownerships. The planning and direction of the work very clearly can be best handled by the public, the State.

Fires must be prevented by education, state-wide and nation-wide, surely a public function. They must be promptly located, when they occur, by adequate detection and communication machinery. This can be reasonably cheap only when the cost can be allocated against each acre of a logical protective unit, when in the case of a lookout tower, every acre which comes within view is equally served without reference to ownership. This means group protection such as by associations of private owners organized and operated under State leadership. Culprits must be apprehended -

a function of the State. Fires must be fought promptly and without reference to property lines, under efficient leadership by men who know how, who are organized in advance and effectively equipped. This also demands group action if it is to be effective and economical. It is specialized work, quite as truly, perhaps, as is the work of the city fire department. A skeleton organization must be constantly on call during seasons of fire occurrence, ready for instant action and for rapid expansion.

It is then only through organized and united effort that forest fires can be prevented and controlled. While it is clear that the public must take the leadership and responsibility, real success in protecting our forests from fire can only be attained when the owner of forest land forms an integral part of the organization, overcoming all hazards which he himself creates, supplying council, money, and labor to perfect and put into operation adequate state-wide programs.

On March 1, 1911, the first step was taken by the Federal Government, through the enactment of the Weeks law, in recognition of joint responsibility between the Nation and the States in the protection of State and private forests from fire. West Virginia and Kentucky were the first of the Southern States to qualify for cooperation under this law, which they did in 1913. These States were joined in 1915 by Virginia and North Carolina, in 1916 by Texas, in 1918 by Louisiana, in 1921 by Tennessee, in 1924 by Alabama, in 1926 by Georgia, Mississippi, Oklahoma, and in 1928 by Florida and South Carolina. With the single exception of Arkansas, the States of the South are now all in the cooperative family.

On June 7, 1924, a second and most significant step was taken by the Clarke-McNary law. Prior to the passage of this law a select committee of the United States Senate toured the country with hearings in each forest region to determine, if possible, the best means for the prevention and control of forest fires and of stimulating reforestation on State and private lands. This law constitutes a great cooperative venture.

Section 1 of this act provides for recommendation by the Secretary of Agriculture of systems for adequate protection by regions in cooperation with appropriate State agencies.

Section 2 of the Clarke-McNary law provides for Federal cooperation with the States in the protection of timbered and forest-producing lands from fire, sharing in the cost of the work. It is based upon the principle that the Federal Government, the States, and the owners of private land in the country should unite upon an effective program of adequate protection of our forest lands. Recognition for Federal reimbursement of private expenditures under State supervision is given by the Clarke-McNary law for the first time. This law also provides for Federal participation in the protection of other areas than those on the watersheds of navigable streams, a broadening of the Weeks law provisions.

The \$2,500,000 authorization for Federal appropriation under the Clarke-McNary law each year for forest fire cooperation was based upon the assumption that we are confronted with a \$10,000,000 job, 50 per cent of the financial burden of which would be borne by the private owner, 25 per cent by the States, and 25 per cent by the Federal Government. This cooperative work is carried on under policies laid down in a cooperative program signed by the Secretary of Agriculture and was developed after much consultation with the States. It provides for a state-wide conduct of the protection work by the State forester upon the basis of plans and estimates submitted to the Federal Government. The responsibility for the conduct of the work is placed squarely upon the States. The Forest Service participates in the making of plans, inspects the projects to make certain that the terms of the cooperative program are being complied with and that the Federal funds are well invested, and through friendly consultation and advice endeavors to give to the individual State the advantage of the experience of other States and of the United States Forest Service. The Forest Service, of course, checks the States' accounts and certifies to the reimbursements which are made to these States after the expenditures are incurred. The State program is directed by State officers. The woods are patrolled, fires are detected, reported, attacked, and suppressed by the State forestry departments, generally working in cooperation with county or other local political units and private owners who contribute to the work voluntarily or as provided by law.

As indicated above, the cooperative plan for forest-fire prevention and control involves a definite sharing of the financial burden by the Federal Government, the State, and the private owner. It presumes the conduct of the work ultimately on a well-rounded, state-wide basis.

Sweet Gum or Storax (*Styrax*) in Demand

The gum which exudes from wounds in red or sweet gum (*Liquidambar styraciflua*) is again receiving considerable attention, according to the Forest Products Laboratory of the United States Department of Agriculture. This little-exploited forest product is used for a variety of purposes, for it contains cinnamic acid, has a pleasant odor, and is an ingredient of pharmaceuticals and of chewing gum. One company now is seeking 13,000 to 15,000 pounds annually with the promise of an increasing demand. This company has advertised its demands widely and has issued a letter of instructions for collection of the gum based on the article by Mahood and Gerry published in the Druggist Circular in January, 1921, with modifications recently suggested by Doctor Gerry. The company is now asking the cooperation of the State foresters and the American Forestry Association educational workers in making their needs known.

Forest Fire Weather Data for the Hardwood—Spruce Forest Type

By PAUL W. STICKEL, Northeastern Forest Experiment Station

There is a high correlation between weather conditions and forest-fire hazard. This is borne out by a preliminary analysis of the data obtained by a forest-fire weather study carried on jointly by the New York State College of Forestry, Syracuse, N. Y., and the Northeastern Forest Experiment Station. The conclusions are based on a 5-year investigation at the Charles Lathrop Pack Demonstration Forest, Cranberry Lake, N. Y., in the hardwood-spruce forest type.

The moisture content of the "duff" or top layer of the heavy litter found on the ground in the forest was used as the indicator of fire hazard. By making actual inflammability tests under various degrees of

duff moisture content with the fire brands listed below, six zones of inflammability are recognized as follows:

Degree of hazard and duff moisture content	Dangerous firebrands
Extreme, below 6 per cent.....	Cigarettes, locomotive sparks, pipe heels, matches, and camp fires.
High, 6 to 10 per cent.....	Locomotive sparks, pipe heels, matches, and camp fires.
Medium, 11 to 16 per cent.....	Pipe heels, matches, and camp fires.
Low, 17 to 22 per cent.....	Matches and camp fires.
Very low, 23 to 29 per cent.....	Duff at edges of camp fires will smolder but not spread much.
Generally safe, 30 per cent and above.	None; generally safe from all.

The relations between the more important weather factors and the inflammability zones of duff in the open and in the forest are illustrated in the following two tables:

LEGEND

A. T. = Air temperature, ° F.
D. T. = Top duff temperature, ° F.
E. V. = Evaporation per hour, cubic centimeters.
R. H. = Relative humidity, per cent.

P. = Depression of dew point, ° F.
Hr. = Hours since last trace of rain.
M. = Hours since last measurable rainfall.

IN THE OPEN

Degree of hazard	A. T.	D. T.	E. V.	R. H.	P.	Hr.	M.
Generally safe.....	Below 68	Below 74	0- 1.2	100- 59	0- 13	0- 18	0- 34
Slightly dangerous.....	68- 74	74- 82	1.3- 1.7	58- 45	14- 20	19- 35	35- 62
Moderately dangerous.....	75- 78	83- 91	1.8- 2.1	44- 34	21- 27		
Dangerous.....	79- 82	92- 102	2.2- 2.6	33- 23	28- 39	36- 77	63- 122
Highly dangerous.....	83- 85	103- 120	2.7- 3.4	22- 15	40+		
Extremely dangerous.....	86+	121+	3.5+	14-		78+	123+

IN THE FOREST

Degree of hazard	A. T.	D. T.	E. V.	R. H.	P.	Hr.	M.
Generally safe.....	Below 84	Below 99	0- 2.1	100- 28	0- 30	0- 89	0- 200
Slightly dangerous.....	84- 87	99- 111	2.1- 2.4	27- 19	31- 41		
Moderately dangerous.....	88+	112+	2.5- 2.8	18-	42+	90+	201- 264
Dangerous.....			2.9- 3.4				265+
Highly dangerous.....			3.5+				
Extremely dangerous.....							

In using the above data to estimate fire hazard it is suggested that 2 p. m. meteorological observations be used, and that the various factors be used in conjunction with one another. In general, 2 p. m. meteorological observations are of greatest value, since at that time daily maximums and minimums are usually secured. In making an estimation of the probable hazard the first step should be to use the hours since trace or hours since last measurable rainfall factors. Then the current psychrometric determinations should be applied to such factors as air temperature, relative humidity, and depression of dew point. It is believed that these data are applicable to the hardwood-spruce forest type throughout northeastern United States and eastern Canada.

Eastern White Pine in Montana

With the aid of a Michigan forester white-pine seedlings (*Pinus strobus*) were shipped in and planted at Sylvanite, Mont., in 1909. The old town of Sylvanite has disappeared and is almost forgotten, but the pines live on and are holding their ground. Apparently twelve hundred 4-year-old *P. strobus* were planted over an area of 3.7 acres. In 1919, 61 per cent of the stand was alive. These records compare favorably with the survival records of western white pine. Many of the trees are now 30 to 35 feet in height and one measured 5½ inches at breast height. The eastern white pines have made double the growth of the native white pines of about the same age intermingled with them.

Annual Meeting of National Committee on Wood Utilization

The National Committee on Wood Utilization of the Department of Commerce held its annual meeting on May 2 at the Department of Commerce Building, Washington, D. C. The Secretary of Commerce, who is the committee's chairman, delivered the opening address. R. Y. Stuart, United States Forester and vice chairman of the committee, presided. The committee is composed of 200 members, representing more than 80 trade associations interested in intelligent utilization of wood. Addresses on building and construction problems were features of the meeting, as was also a discussion of the Scandinavian gang-sawing system introduced into the United States and successfully tested on the Pacific coast by the committee (FOREST WORKER, January, p. 27), and particularly the possibility of extending the use of this system to other parts of the country. Other projects of the committee brought up for consideration were the stocking of chemically treated wood by retail lumber yards; fireproofing, hardening, softening, and other wood-treating processes; and the promotion of the use in the manufacturing field of small dimension stock—that is, stock cut to sizes which can be used by industry with a minimum of manufacture.

Major Stuart spoke of the close connection between utilization of forest products and the practice of good forestry, and of the encouragement given by the Wood Utilization Committee to the profitable use of forest crops. He also emphasized the fact that while the committee's work centers in the wise and effective utilization of wood products its influence for good radiates to the forest resource itself, since forest conservation is complementary to wood conservation. He explained the difference between them as that of complete utilization in wood conservation compared with methods of forest utilization which assure perpetuation of the forest crop and are lastingly beneficial to grower, producer, and consumer alike. At the same time he made plain the mutuality of interest between wood utilization and forest utilization, and the need for recognition of this relation and of cooperative effort to further it.

Various activities of the committee which were reported as having gained headway include—

1. Lumber stresses: Under the chairmanship of F. O. Dufour, of Philadelphia, the preliminary work of establishing a subcommittee on lumber stresses is now being carried out. This subcommittee, which will be fully organized during the summer, will be composed of experts in the engineering and architectural field.

2. How to judge a house: Under the direction of a subcommittee of which N. Max Dunning, Chicago architect, is chairman, a bulletin on this subject is now

being prepared. The object of this bulletin, which will be appropriately illustrated, is to answer the questions concerning construction and design which arise in the mind of the individual who is considering the purchase or building of a home. The bulletin will be prepared during the summer, and will be released sometime during the present year.

3. Furniture booklet: In cooperation with the National Association of Furniture Manufacturers and the National Retail Furniture Dealers Association, the committee is developing a project involving the education of consumers to a better appreciation of furniture construction and design. This summer a handbook on the subject will be prepared. The committee's interest in this work lies in putting wood for furniture to its most efficient use, and applying proper design and construction to furniture.

4. Insulation of buildings: A project which has for its object an educational campaign among home owners and builders in regard to the proper methods of insulating dwellings will soon be started. The question of sound deadening and accoustics will necessarily form a part of this project. A brief treatise on these subjects written in a popular vein, will be prepared.

5. Booklet on wood construction in the Tropics: Under the chairmanship of I. W. McConnell, a subcommittee is now being organized for the purpose of producing a handbook on wood construction in tropical countries. This book will be of particular interest in sections of the United States and its possessions where climatic and other conditions make the use of wood difficult. A field survey is now being undertaken by the committee in order to bring together all available facts. The bulletin will be prepared during the latter part of the present year.

6. Airplane hangar test: Cooperating with the National Lumber Manufacturers Association, the committee placed at the disposal of the Fact Finding Committee for Aeronautics an airplane hangar of wood construction erected on the Bureau of Standards lot, in Washington, D. C. This hangar was provided with automatic sprinklers, and a test covering the fire risk was made during the latter part of April. Based on the result of this test, the committee will develop a bulletin on wooden airplane hangar construction.

7. Industrial uses of American woods: A difficulty confronts industrial wood users in determining the proper wood to be used for each specific purpose. Realizing this, the committee is laying the foundation for a handbook on the subject. This project will require about two years for completion, and will be based largely on the result of official tests and actual present uses. It will be handled mostly through questionnaires. The principal wood-using industries are cooperating with the committee in the preparation of this handbook.

Third Annual Planting of Cut-Over Land Made by Lumber Company

Pursuing its policy of investigating the possibilities of reforestation, the Booth-Kelly Lumber Co. has just completed its third annual experimental planting of cut-over land in Oregon with several of the most promising tree species. The first planting, three years ago, was of 10,000 plants of redwood and western yellow pine. Apparent success in adapting the latter to western Cascade conditions led to a much larger planting in 1929, with the addition of Port Orford cedar and red cedar in order that the growth rates of these species might be compared with those of Douglas fir and other native species. Record is kept of planting methods, costs, and success, to determine the relative advantages of different introduced species to supplement natural reforestation in a practical commercial way.

This year 12,000 ponderosa pine, 2,000 Port Orford cedar, 2,000 ash and 500 mulberry have been added to previous plantings of these species and the experiment further expanded by several thousand Scotch pines, Chinese elms, and larch. The stock was supplied by the cooperative forest school at Corvallis. Planting was directed by Norman G. Jacobson, of the Western Forestry and Conservation Association.

New Jersey Plant Uses Wood Shavings as Raw Material

Efforts of the National Committee on Wood Utilization to put wood waste to definite uses have resulted in the utilization of wood shavings by an important manufacturing concern in New Jersey. This company uses from 300 to 500 carloads of shavings yearly. While white pine shavings are preferred, any clear softwood or hardwood shaving that is free from foreign matter and of light color—such as yellow poplar, spruce, basswood, cottonwood, aspen, etc.—can be used.

Axel H. Oxholm, director of the National Committee on Wood Utilization, says that the committee is constantly receiving requests from industries in a position to use material which to the woodworking plant and sawmill is mere "waste." The committee's surveys of nonutilized wood in Virginia and North Carolina showed that in Virginia 28,000 carloads and in North Carolina 33,000 carloads of wood waste are now available as raw material for pulp mills, fiber factories, box plants, and similar industries.



The larch canker which was discovered in 1927 in Massachusetts on some trees about 20 years old which had been grown from seedlings imported from Europe, has now been brought under control, according to Dr. Perley Spaulding of the Bureau of Plant Industry. Larch canker attacks larch, Douglas fir, and western yellow pine and caused considerable worry about a year ago, lest it spread from New England to the west, but Doctor Spaulding reports that it is now cleared up without any danger of spreading to the West.

Conservation Commission Authorized by Congress

A bill authorizing the President to appoint a commission to study and report on conservation and administration of the public domain became law on April 10.



Studies at the Northeastern Forest Experiment Station have shown that the small twigs on softwood timber decay much more slowly than do the large limbs. These studies showed also that the hardwood limbs decay very fast compared with the softwood, consequently hardwood is neither piled nor burned, but the softwood brush is being both piled and burned to make reproduction easier.

Foreign Notes

4,000,000 New Zealand Pines Go to South Africa

A South African company has been organized to finance the planting of over 4,000,000 New Zealand white pines on 4,000 acres of land about 6 miles from

Pretoria, South Africa, because of the steadily increasing demand for forest products, such as timber for the manufacture of box shooks to be used by South African fruit exporters. According to the Lumber Trade Journal, large quantities of shooks are at the present time imported from north European sources.

Chile Still Has Large Native Timber Supplies

Although Chile is importing Douglas fir and other woods from the United States, it has extensive forests supporting an important lumber industry, according to advices from Assistant Commercial Attaché Robert G. Glover, at Santiago.

The Chilean mills supply the greater part of the demand in the northern half of the country and also export furniture wood to Argentina and ties to Peru. The nitrate region of the north depends largely on Douglas fir, and this wood has filled out the deficiency in native lumber in the south during the building boom of the past year. About 70 per cent of the importations of Douglas fir is for the account of the large American mining companies operating in the north of Chile.

Chile has hardwoods suitable for general construction, interior finish, furniture, and ties. Of other species, cedar, cypress, and a wood similar to our southern yellow pine are the most important. Several of these species are durable.

Chile is almost 3,000 miles in length from north to south, and since most of the lumber is in the southern part of the country freight rates form a large part of the costs. There are relatively few large and segregated stands of timber that would justify the expense of installing a large mill; consequently, most of the lumber is manufactured by portable-type mills. What is now the principal lumbering section was only a few years ago the southern frontier of the rich agricultural belt of Chile. Probably 75 per cent of the lumber is cut on the farms.

40,000 Acres to be Planted to Forests in Rhodesia

The Government of Southern Rhodesia has adopted plans for planting about 40,000 acres of softwoods. At the present time practically all the softwoods used in construction work in Rhodesia, South Africa, have to be imported.

As a first step the Government acquired in 1927 an area of 18,420 acres of uncultivated land situated on the highlands of Rhodesia's eastern border. The tract lies about 30 miles north of Untali and the location is well suited to afforestation. In 1929 this area was increased to nearly 60,000 acres by the purchase of additional land which contains a limited stand of indigenous timber that is now being surveyed. Early in 1928, during the rainy season, 690 acres of the original tract was planted with conifers, and in the rainy season of 1929-30 plans called for the planting of about 1,000 additional acres of softwood trees.

The governmental forestry service is also taking means to determine which of the species that have developed under natural conditions are the most hardy. The conifers planted on the original tract have shown remarkable growth, and several varieties of softwoods which will grow rapidly are being developed in these highlands.

Australian Forester Visits Alabama

A. D. Lindsay, a research official of the Australian Federal Forestry Bureau, arrived at Montgomery May 2 to spend some time in the State inspecting the work of the Alabama Commission of Forestry, with particular reference to the growing of southern pines. On the first day of his visit Lindsay viewed a considerable part of the State from the air in the plane assigned to the commission of forestry. He will visit the State forest nursery during the period of his stay.

The Australian Forestry Bureau is considering the introduction of southern pines into the island continent, Mr. Lindsey says. There is an abundance of valuable hardwoods in Australia, but softwoods are in great demand. Experiments are being made to determine which species of pines will be most adaptable to the needs and growing conditions in that country.

Forest Economist from India Touring United States

India is rapidly advancing toward a full realization of the value of timber preservation and wood utilization, according to Sonti Kamesam, forest economist of the Forest Research Institute of Dehra Dun.

Mr. Kamesam is on a 2-year tour which is to take him through the United States, Canada, and Europe. His prime interest is timber utilization and wood preservation.

India has great forests, government-owned, and they are well preserved, Mr. Kamesam said, during a recent visit to the headquarters of the Southern Pine Association. Selective cutting and reforestation are not new, having been practiced in India for many years. There are 40,000 miles of railways in India that are using wood for ties. There will be need for more and more lumber along these lines, and one of the purposes, Mr. Kamesam said, of this research trip is to study methods used in America and Europe in treating lumber to prolong life. Mr. Kamesam hopes that upon his return to India he will be able to persuade Government officials to utilize more timber in railway and telegraph systems and harbor construction.

India's vast forest resources present a field for the introduction of woodworking plants. During this trip Mr. Kamesam is making a study of sash-and-door factories, toy factories, and other woodworking mills,

so that upon his return to India he may get such enterprises started as one step toward the wood-utilization program on which he is working.

The Forest Research Institute, of which Mr. Kamesam is a member, is a Government institution. Mr. Kamesam, as its forest economist, is probably the best versed authority in wood preservation in his native land. The various data he is compiling while on this tour will form the nucleus for a book which the Government has instructed him to write on the subject of wood preservation and wood utilization.

Blister Rust Has Reached Nova Scotia

White pine blister rust has found its way into Nova Scotia, says a report to the Bureau of Plant Industry. Until recently the rust was seen on currant bushes only, but two or three infected young pines have now been discovered. It is expected that the rust will be placed under control observation by establishing various plots suitably located for annual study. Eventually, areas in which currants and gooseberries have been eradicated may be put to the growing of white pine.

Personals

Nelson Ferris MacDuff

Nelson F. MacDuff, forest supervisor of the Cascade National Forest, Oreg., since 1919, met a tragic and untimely death on April 4, 1930. He was found dead from a pistol shot early next morning in a grove of young Douglas firs along the forest trail he was accustomed to travel. The manner of his death is unknown.

Nelson F. MacDuff was born in Ohio on July 2, 1883, and was reared in Michigan. Long before he had left high school he had chosen forestry as his life's work. He graduated in forestry at the University of Michigan in 1907 with high honors and election to Sigma Xi. He passed the forest assistant's examination and went west as forest assistant on the Siskiyou National Forest, Oreg. He was promoted to assistant supervisor of the Siuslaw Forest in 1910 and became forest supervisor of the Cascade Forest in 1919.

In his 11 years of administration and protection of this important timber forest he was responsible for the development of its fire detection and communication systems, for the building of many roads and trails, and for the consummation of a large timber sale by which a big body of overmature Douglas fir was utilized.



Regional Forester E. W. Tinker, of the Lake States region, announces the transfer of Forest Supervisor A. G. Hamel, for three and one-half years supervisor of the Superior National Forest, to the regional office in Milwaukee, where he will take over the work formerly handled by Regional Forest Inspector C. A. Hoar, in cooperation with the States in fire protection.

Mr. Hoar will be assigned as assistant regional forester in charge of fire protection, improvements, and land uses within the national forests of the Lakes States region. S. D. Anderson, at present supervisor of the national forest purchase units in Wisconsin, will be transferred to the Superior National Forest to succeed Mr. Hamel, and R. U. Harmon, at present assistant supervisor on the Superior National Forest in Minnesota, will be transferred from that forest to take charge of the national forest purchase units in Wisconsin. Mr. Harmon has had long experience in connection with the administration of national forests, and particularly fire protection and suppression work, as well as planting work done within the Superior National Forest.

R. C. Brown, of the gipsy-moth laboratory, Bureau of Entomology, United States Department of Agriculture, sailed from New York to return to his temporary headquarters in Budapest, Hungary. Before reaching Budapest he will visit Sweden in search of information regarding parasites of a sawfly, *Phyllotoma nemorata* Fall, which has recently attracted considerable attention as a leaf miner of birch in Maine, New Hampshire, Nova Scotia, and New Brunswick.

Walt L. Dutton, formerly forest supervisor of the Malheur National Forest, Oreg., has been promoted by transfer to fill the position of assistant in range management in the regional forester's office at Portland, Oreg., made vacant by the promotion of F. V. Horton to assistant regional forester. Mr. Dutton's place on the Malheur Forest has been filled by promotion to forest supervisor of Carl M. Ewing, former assistant supervisor. These two changes took effect on May 1.

Charles J. Kraebel, of the California Forest Experiment Station in Devil Canyon, and H. H. Hunt, of the San Bernardino Forest office, recently, under the auspices of the Kiwanis Club, gave vocational talks on forestry to a large number of San Bernardino highschool boys who have chosen forestry as their profession.

At the request of the War Department, Dr. T. E. Snyder, of the Bureau of Entomology, recently left Washington to inspect, with a representative of the Forest Products Laboratory, military supplies of wood at arsenals in Rock Island, Ill., New Cumberland, Pa.,

and Springfield, Mass. These inspections are made periodically, to prevent serious damage by powder-post beetles.

T. E. Shaw, formerly in charge of blister-rust control in Pennsylvania, has been appointed extension forester for the State of Indiana. His headquarters will be Purdue University, Lafayette, Ind.

George W. Peavy, dean of the school of forestry, Oregon State College, who was injured in an automobile accident early in April, will not be able to teach for the rest of the school year.

Bibliography

Forest Service Reports Practices Necessary For Timber Crop Production in Northeast

Full protection from fire, reforestation of denuded areas, and improved cutting practices are the minimum requirements necessary for successful timber growing in the Northeastern States.

In the attempt to meet the demand for the information of practical ways and means of growing timber profitably, the Forest Service is presenting the results of experience and investigation in timber growing and logging practice in the New England States, New York, New Jersey, and Pennsylvania. This investigation is one of a series of "minimum requirements" studies which the Forest Service has been carrying on dealing with the requirements for successful timber growing in the 12 principal forest regions of the United States.

The Northeast is the most densely populated and at the same time one of the most extensively forested regions in the United States. It has five distinct forest types, each of which consists of a characteristic combination of species.

The real forest problem of this section is one of building up large areas of run-down forests, says the Forest Service. Even where fire has been kept out, cutting and subsequent neglect have rather generally resulted in a progressive deterioration which is evidenced by poorly stocked stands and increased representation of the less desirable species. To-day comparatively little forest land in the region is producing the yield of which it is capable.

Fire control is nearly the only requirement that is absolutely necessary to keep most land already for-

ested at least partially productive, the Forest Service finds. Essential features of adequate fire control include centralization and organization of control activities, maintenance of prompt detection agencies, a suppression organization that can quickly get a properly equipped crew to every fire, and penalties for carelessness with fire in any form.

Planting is declared necessary to restore forest productivity on lands which have been so severely burned as to prevent natural reproduction, on occasional unburned cutover areas which have not reproduced naturally, and on abandoned farm lands which are not reverting to forest.

The next step beyond keeping the land productive through protection and reforestation is to handle a forest properly so as to obtain a regular income from it. This necessitates such measures as improvement cuttings, regulation of grazing, and harvesting in such a way as to insure perpetuation of the stand.

The production of full timber crops often requires an outlay that could be avoided by letting nature take its course; but this outlay is reasonably sure to be repaid manyfold by the increased value of the final product, the Forest Service's studies indicate. This is particularly true in the Northeast, where favorable climate and soil conditions, desirable trees, and excellent markets combine to make timber growing a profitable business.

Technical Bulletin No. 166, Timber Growing and Logging Practice in the Northeast, issued by the United States Department of Agriculture, gives the detailed results of the Northeast study. Copies may be had, free of charge while the supply lasts, by writing to the United States Department of Agriculture, Washington, D. C.

Agriculture Yearbook Includes 18 Forestry Articles

The United States Department of Agriculture's latest Yearbook of Agriculture is dated 1930 instead of 1929. There is no Yearbook bearing the date 1929. This change in the method of dating is made to conform with the practice commonly followed in the publication of yearbooks, whereby such volumes are designated by the year in which they are printed rather than by the year surveyed. The present volume surveys agricultural conditions in 1929.

Like the yearbooks issued for the three preceding years, this volume features numerous short articles reporting recent developments in agricultural science and practice. It offers up-to-date information on most of the important phases of agriculture. Forest Service specialists contributed the following articles:

1. Ranges Made Usable by Hauling Water for Livestock, by Douglas C. Ingram, associate range examiner.
2. Lumber for Farm Buildings Should Be Well Seasoned, by Rolf Thelen, engineer in timber physics, Forest Products Laboratory.
3. Forest-Grown Evergreens Can Be Transplanted if Proper Care Is Taken, by G. A. Pearson, director, Southwestern Forest Experiment Station.
4. Christmas Trees a Profitable Farm Crop in Some Localities, by F. H. Eyre, associate silviculturist.
5. Christmas Tree Demand Is Means of Improving Pike National Forest, by E. S. Keithley, supervisor, Pike National Forest.
6. Range-Forage Grazing Should Leave Fifth or More of Plant Volume, by Ernest Winkler, assistant regional forester, Intermountain District.
7. Farmers Numerous in Throng of Motorists That Camp in Forests, by F. R. Johnson, technical assistant.
8. Timber and Cattle Can Be Raised Together on Southern Cutover Land, by L. J. Pessin, associate forest ecologist.
9. Big Game Increase in Southwest Forests Calls for Control Measures, by D. A. Shoemaker, range examiner.
10. Forest-Fire Fighters Use Big Machines in Cutting Control Roads, by Wallace Hutchinson, assistant regional forester, California District.
11. Snag Felling by Dynamite Cheaper Than by Sawing, by F. V. Horton, supervisor, Columbia National Forest.
12. Range Stocking Must Be Conservative to Allow for Poor Years, by Matt J. Culley, director, Santa Rita Range Reserve.
13. Forest Land Exchange Policy Is to Protect Timber and Watershed, by John W. Spencer, administrative assistant.
14. Forest Planting an Economic Need in Northern Lakes Area, by W. F. Ramsdell, assistant regional forester, Lake States Region.
15. Woodlands Well Managed Bring in More Cash, by Bernard Frank, junior forester.
16. Forestry Cause is Helped by Northwest Chambers of Commerce, by John D. Guthrie, assistant regional forester, North Pacific Region.
17. Timber Waste Large in the Northwestern Douglas Fir Forests, by A. H. Hodgson, forest examiner.

18. Forestation Averts Erosion on Abandoned Mountain Farm Land, by C. R. Hursh, associate forest ecologist.

The Yearbook is for sale by the Superintendent of Documents at \$1.50 the copy.

Growing Spruce and Fir Pulpwood Made Profitable

Spruce and fir, the pulpwoods of the Northeast, are increasingly in demand for paper making, and conditions for the production of continuous forest or woodland "crops" are particularly favorable in the spruce and fir region of the Northeast. The most important consideration upon which the pulpwood producer must base whatever form of forest management he practices is the presence or absence of sufficient young growth of spruce and fir in the stand before the mature wood crop is cut. It is from this advance growth that the new pulpwood crop must be matured. "Seeding in" after cutting seldom if ever produces satisfactory stands of pulpwoods, even were the delay in growth of no account.

Leaflet No. 57 of the United States Department of Agriculture, Pulpwood Crops in the Northeast, by M. Westveld, silviculturist, Northeastern Forest Experiment Station, Branch of Research, Forest Service, just issued, contains general conclusions regarding management of pulpwood stands arrived at as the result of intensive studies of a large number of stands and briefly applies these conclusions to the various types of forest in the Northeast.

Booklet Tells of Eli Whitney Forest

The Yale University School of Forestry has recently published a bulletin dealing with the Eli Whitney Forest. The volume is entitled "Eli Whitney Forest; A Demonstration of Forestry Practice," by Ralph C. Hawley and William Maughan.

The bulletin consists of 46 pages of reading matter and about 50 pages of illustrations. Three colored maps of the area are also included. The Eli Whitney Forest is representative of the oak region of Connecticut, New Jersey, and southeastern New York. The property is owned by the New Haven Water Co., a private corporation supplying water to the city of New Haven, Conn., and to the surrounding territory. This company, since 1900, has applied forestry practices to these lands in cooperation with the Yale School of Forestry. The bulletin describes the various forest types found in this locality and discusses the management policy adopted for this area.

Knowledge of Timber Values Necessary to the Woods Farmer

A revision of United States Department of Agriculture Farmers' Bulletin No. 1210 has been issued by

the department. This bulletin gives useful information on the measuring and marketing of farm timber, prepared by Wilbur R. Mattoon, extension forester, and William B. Barrows, formerly forest examiner. Copies may be obtained from the department as long as the supply lasts.

South Seen as Important Source of Pulpwood

According to a publication entitled "South as a Source of Wood Pulp," issued by the Georgia Forest Service, the greatest potential source of pulpwood for paper manufacturing in this country is in the pine belt of the South. Government data on rate of growth are cited to show that southern pine grows seven to ten times faster than red spruce, now generally used for paper manufacture.

It is shown that paper manufacturers are beginning to realize the value of the pine belt as a source of supply. In 1921 there were 26 pulp industries in 9 States with an output of 382,500 tons annually, whereas in 1929 there were 36 establishments with a capacity for 1,000,000 tons. A rapid and large increase is anticipated because of the actual and potential supply of both pine and hardwood.

Leaflet 8: South a Source of Wood Pulp, By C. A. Whittle, Georgia Forest Service.

British Manual on Timber

The British Engineering Standards Association has just issued a publication entitled "Methods of Testing Small, Clear Specimens of Timber," and designated No. 373-1929, the Bureau of Standards states. The purpose of the pamphlet is to compare the mechanical properties of one species of timber with those of another.

Northern Rocky Mountain Trees and Shrubs by Joseph E. Kirkwood, late professor of botany at the University of Montana, is a book of some 350 pages suited to the use of rangers and others of little or no botanical training who wish to know their trees and shrubs. The text is illustrated by 87 pen-and-ink figures and 35 plates. The pictures alone are in many cases sufficiently clear and detailed to identify the plant for the person not inclined to study the keys and descriptions. This book is as well adapted to Idaho as to eastern Montana forests. It is understood that the edition is limited to 1,000 copies, priced at \$7.50.

The United States Department of Agriculture Forest Products Laboratory distributed during March mimeographed reports of studies by F. L. Browne, senior chemist, on Properties of Wood that Determine the

Service Given by Exterior Paint Coatings, and on The Effect of Priming-Coat Reduction and Special Primers Upon Paint Service on Different Woods.

A revision of United States Department of Agriculture Bulletin No. 863, Forestry Lessons on Home Woodlands, has been issued. This bulletin was prepared by Wilbur R. Mattoon, extension forester, Forest Service, and Erwin H. Shinn, in charge, agricultural instruction, Extension Service. Copies may be obtained free from the department as long as the supply lasts.

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- National Forest Map Folders: White Mountain, Santa Fe, California; Road and Information Map of Washington.
- National Forest Administration Maps; ¼-inch, Atsaro and Kaibab.